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# Primary Care Practices' Progress of Using Electronic Health Information Exchange (HIE)

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Primary Care Practices' Progress of Using  
Electronic Health Information Exchange (HIE)

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### Abstract

Now that EHRs are purportedly fully implemented in the healthcare industry, it is important to evaluate the electronic Health Information Exchange (HIE) between primary care facilities, laboratories, hospitals, specialists, regional coops, and public health authorities.

Meaningful Use Stage 3 implementation is to begin this year, 2018. Complementing this implementation, the Medicare Access and CHIP Reauthorization Act, MACRA, was signed into law on April 16, 2015. MACRA removes eligible clinicians from EHR Incentive Programs that were previously established by the HITECH Act. MACRA also creates the Quality Payment Program that the CMS will use for Medicare and Medicaid reimbursement to primary care providers. This payment program rewards clinicians for value over volume. The amount of reimbursement the CMS pays out is dependent on performance markers deemed as quality patient care. Electronic HIE directly affects a clinician's ability to achieve these performance markers.

This research study assesses the progress that primary care practices have had in reaching full spectrum industry electronic health information exchange. It will answer the question; does primary care practices electronically connect with their local laboratories, hospitals and regional data collecting entities. Additionally, the barriers that prevent electronic health information exchanged and interoperability between primary care practices and other medical professionals outside their organization will be analyzed. This study focus is limited to primary care providers.

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### **Definition of Terms and Acronyms**

AHIMA: American Health Information Management Association

CDC: U.S. Centers for Disease Control and Prevention

CE: Covered Entity

Data Repository: State governmental repositories that track communicable illnesses

Electronic HIE: The term phrase Electronic Health Information Exchange is used in this paper to distinguish that the transmission of PHI is electronically automated. Fax HIE though technically electronic is not included in this definition. Fax requires conversion of electronic data to paper communication.

FDA: U.S. Food and Drug Administration

HHS: The Department of Health and Human Services

HIM: Health Information Management

HIT: Health Information Technology

HITECH: Health Information Technology for Economic and Clinical Health

ISA: Interoperability Standard advisory

OCR: Office of Civil Rights

ONC: The Office of the National Coordinator for Health Information Technology

PHI: Protected Health Information

Primary Care Providers: Are defined as physicians whose services are offered directly to the consumer

REC: Regional Extension Center

Small Group Primary Care Providers: A primary care practice owned by four or less individuals

Solo Primary Care Providers: Are primary care practice owned by one individual

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Primary Care Practices' Progress of Using  
Electronic Health Information Exchange (HIE)

**Chapter 1: Introduction**

Health Information Technology (HIT) evolution has opened the door for health care providers to exchange, store, share and analyze patient information electronically across the entire healthcare spectrum. This provides the healthcare industry the capability to migrate from paper-based health records to electronic health records (EHR). "Electronic health records permit electronic documentation of current and historical health, tests, referrals, and medical treatments as well as enabling practitioners to order tests and medications electronically" (Zandieh, et al., 2008).

For a decade now, legislation such as the Health Insurance Portability and Accountability Act (HIPAA), the Health Information Technology for Economic and Clinical Health Act (HITECH), the American Recovery and Reinvestment Act (ARRA), and the Affordable Care Act (ACA) mandate specific rules in how healthcare data is to be stored, maintained, accessed, and exchanged. The health care organizations that these laws pertain to are referred to as Covered Entities (CE). "Covered entities are defined in the HIPAA rules as (1) health plans, (2) health care clearinghouses, and (3) health care providers who electronically transmit any health information in connection with transactions for which HHS has adopted standards. Generally, these transactions concern billing and payment for services or insurance coverage" (National Institutes of Health, 2007). However, research, laboratories, and electronic health records exchanges are also covered entities. "For example, hospitals, academic medical centers, physicians, and other health care providers who electronically transmit claims transaction information directly or through an intermediary to a health plan are covered entities. Covered

entities can be institutions, organizations, or persons.” Furthermore, “physicians who conduct clinical studies or administer experimental therapeutics to participants during the course of a study must comply with the Privacy Rule if they meet the HIPAA definition of a covered entity” (National Institutes of Health, 2007). The legislative final rules are very comprehensive and wide-ranging.

Protected Health Information (PHI) interoperability exchange is more common than years past. As technology progresses, lawmakers have attempted to protect and secure the exchange of PHI. HIPAA is one of the legislation's that govern the exchange of PHI. HIPAA “provides regulations that describe the circumstances in which covered entities are permitted, but not required, to use and disclose PHI for certain activities without first obtaining an individual's authorization” (ONC, 2016).

HIPAA governs the PHI exchange of the following public health situations:

- Exchange for Reporting of Disease
- Exchange for Conduct of Public Health Surveillance
- Exchange of Public Health Investigations
- Exchange of Public Health interventions
- Exchange Subject to Food and Drug Administration Jurisdiction
- Exchanges for Persons Exposed to Communicable Disease and for Related Public Health Investigation
- Exchange in Support of Medical Surveillance of the Workplace (ONC, 2016).

For PHI exchange between the primary care sector and covered entities, there are three requirements that must be met to exchange information:

1. “Both CEs must have or have had a relationship with the patient (can be a past or present patient)
2. The PHI requested must pertain to the relationship

3. The discloser must disclose only the minimum information necessary for the health care operation at hand” (ONC, 2016).

In the New England Journal of Medicine, 2001, it was quoted that “outpatient primary care is the largest health care delivery platform in America.” At that time, solo practices are the most common in the primary care sector. “One study, reported that 45% of primary care physicians practiced in sites with 5 or fewer physicians.” Nonetheless, it is reported that solo practices are in decline (Liaw, Jetty, Petterson, Peterson, & Bazemore, 2016). Jump forward ten years to 2011. “Solo practices declined to only 20% of physicians across all specialties” (Liaw, Jetty, Petterson, Peterson, & Bazemore, 2016). This sentiment agrees with other healthcare industry experts. Dr. Arlene Weissman, Director, Research Center, American College of Physicians, says in her March 15, 2018 correspondence with the researchers “small physician practice is shrinking in today's environment.”

### **Need for Current Study**

This study focuses on the primary care sector. It will determine to what extent these primary care practices are achieving electronic HIE with associates outside their local practice. New CMS reimbursement models and quality of care measures put a spot light on primary care practices' interoperability and electronic health information exchange utilization. The Merit-based Incentive Payment System (MIPS) Measures is described in Appendix 5.

### **Background**

The U.S. legislative mandates and health information technology advancements are creating a need for interoperability between primary care practices and regional coops, hospitals and labs. Over the last thirty years, the healthcare industry has evolved from human observation, non-computerized statistical assessment, and paper-based information collection to statistical and

electronic database collection and assessment. The abundance of shared information helps healthcare clinicians provide a more comprehensive quality of care. However, it is not clear which sectors in the healthcare industry have implemented interoperable HIE technologies. Conversely, the quality of care may be hindered by the lack of health information exchange and interoperability between primary care practices and specialists, labs, and hospitals that services the same patients. Healthcare data sharing is “evolving from just the use of technology to the demand for the use of validated data and information” (Palkie, 2013).

The cost of implementing an EHR and an electronic health information organizational network is a well-known barrier in the healthcare industry. The HITECH Act of 2009 has help to alleviate some of the financial burden implementing an EHR system. However, enrollment for the EHR incentive programs ended in 2014 for Medicare and 2016 for Medicaid. “The adoption of EHRs became commonplace among various health providers by 2015. Although EHRs are now mainstream, responses to EHR adoption initiatives are mixed. Multiple challenges such as EHR interoperability, data security, and usability still exist” (Hamamura, Withy, & Hughes, 2017). Hence, a new financial barrier has emerged. The cost of interoperability between unassociated organizational health care practices. Primary care practices are finding it “too expensive” to connect to their local and regional hospitals and laboratories.

To electronically connect to other healthcare systems, primary care practices are finding that they must upgrade both hardware and software to be compatible. The lack or electronic HIE capabilities hinders the quality of care when a patient is serviced in multiple settings of the healthcare system. Nonetheless, the claim of better quality of care is supported by an article in *Healthc (Amst)* where “84% of EHR adopting physicians agreed ‘EHR use produces clinical benefits’” (Jamoom, Patel, Furukawa, & King, 2014).

**Purpose of Study**

The purpose of this study is to assess the progress primary care practices have made in electronically exchanging their health information with regional coops, hospitals, specialist, labs, and pharmacies. This includes but not limited to electronic exchange of lab results, X-rays, prescriptions, and patient records. This study also assess to what extent primary care providers still are sending and receiving patient health information via fax.

**Significance of Study**

“In the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), Congress declared a national objective to achieve widespread exchange of health information through interoperable certified electronic health record (EHR) technology nationwide by December 31, 2018” (The Office of the National Coordinator for Health Information Technology, 2017). This national objective may be in jeopardy if there are significant hindrances to achieving this goal. Therefore, this study is significant because it may reveal unforeseen challenges that prevent primary care providers' from achieving electronic HIE and interoperability across the spectrum of the healthcare system.

## Chapter 2 Literature Review

Health IT standards and interoperability is a major initiative in the US. As late as 2013, the Office of the National coordinator for Health IT (ONC) and the Office of Science & Technology (OST) was focused on the IT Standards and Interoperability. This focus includes the technology requirements for meaningful use and domestic interoperability challenges (Fridsma, 2013). There is an effort to work with other countries to find interoperability solutions for like universal needs and challenges. The ONC and OST both are engaged in the international health IT community. Through this collaboration the international health IT community have achieved several milestones. These milestones include:

- “The 2010 Memorandum of Understanding (Appendix 1) that was signed by Secretary Sebelius and Neelie Kroes, Vice President of the European Commission, which articulated a set of goals and principles that would guide international collaboration around health IT and health IT standards
- The attendance of the Secretary of Health from the UK at a federal advisory committee
- The continued discussions between ONC and NHS that are underway to organize a repeat visit and share progress” (Fridsma, 2013).

In 2014, the ONC and the Health Information Technology Policy and Standards Committee meet to discuss interoperability progress. The product of those meeting is a roadmap to achieve interoperability in the US. The document’s executive summary (Appendix 2) summaries the roadmap. A 10-Year Vision to achieve interoperable health IT infrastructure was created. This initiative is “intended as an invitation to health IT stakeholders – clinicians, consumers, hospitals, public health, technology developers, payers, researchers, policy makers and many others – to join ONC to develop a defined, shared roadmap that would allow us to

collectively achieve health IT interoperability as a core foundational element of a learning health system” (DeSalvo, 2014). These Health IT stakeholders came together and “structured their work on five critical building blocks for a nationwide interoperable health IT infrastructure:

1. Core technical standards and functions
2. Certification to support adoption and optimization of health IT products and services
3. Privacy and security protections for health information
4. Supportive business, clinical, and regulatory environments
5. Rules of engagement and governance” (DeSalvo, 2014)

The American Recovery and Reinvestment Act (ARRA) ignited the electronic HIE advancement. ARRA enacted the HITECH Act that established the Meaningful Use standards. These standards are used to measure the progress health care providers have made in implementing and using electronic HIE. Meaningful Use Stage 2, Final Rule, states that “by 2014, providers will have to demonstrate, and vendors will have to support, the actual exchange of structured care summaries with other providers—including across vendor boundaries—and with patients. Whether through “push” or “query” methods, the requirements in the rule assure exchange *is* occurring while avoiding undue burden on providers and vendors to track and measure this exchange” (Mostashair).

Stage 3 Meaningful Use Final Rule (Appendix 3) implementation is to begin this year, 2018. Complementing this implementation, the Medicare Access and CHIP Reauthorization Act, MACRA, was signed into law on April 16, 2015. MACRA removes eligible clinicians from EHR Incentive Programs that were previously established by the HITECH Act. MACRA also creates the Quality Payment Program that the CMS will use for Medicare and Medicaid reimbursement to primary care providers. This payment program rewards clinicians for value

over volume. The amount of reimbursement the CMS pays out is dependent on performance markers deemed as quality patient care. Electronic HIE directly affects a clinician's ability to achieve these performance markers.

The U.S. legislative mandates and health information technology advancements are creating a need for interoperability between primary care practices and regional coops, hospitals and labs. Over the last thirty years, the healthcare industry has evolved from human observation, non-computerized statistical assessment, and paper-based information collection to statistical and electronic database collection and assessment. The abundance of shared information helps healthcare clinicians provide a more comprehensive quality of care. However, it is not clear which sectors in the healthcare industry have implemented interoperable HIE technology. Conversely, the quality of care may be hindered by the lack of interoperability between primary care practices, specialists, and hospitals that services the same patients. Healthcare data sharing is “evolving from just the use of technology to the demand for the use of validated data and information” (Palkie, 2013).

The cost of implementing an EHR and an electronic health information organizational network is a well-known barrier in the healthcare industry. The HITECH Act of 2009 has helped to alleviate some of the financial burden implementing an EHR system. However, enrollment for the EHR incentive programs ended in 2014 for Medicare and 2016 for Medicaid. “The adoption of EHRs became commonplace among various health providers by 2015. Although EHRs are now mainstream, responses to EHR adoption initiatives are mixed. Multiple challenges such as EHR interoperability, data security, and usability still exist” (Hamamura, Withy, & Hughes, 2017). Hence, a new financial barrier has emerged. The cost of interoperability between unassociated organizational health care practices. Primary care practices are finding it “too



expensive” to connect to their local and regional hospitals and laboratories. Many small solo and small group owned practices are also not submitting medical information statistics to state and regional consortium databases.

To electronically connect to other healthcare systems, primary care practices are finding that they must upgrade both hardware and software to be compatible. The lack of electronic HIE capabilities hinders the quality of care when a patient is serviced in multiple settings of the healthcare system. Nonetheless, the claim of better quality of care is supported by an article in *Healthc (Amst)* where “84% of EHR adopting physicians agreed ‘EHR use produces clinical benefits’” (Jamoom, Patel, Furukawa, & King, 2014).

It is now 2018 and results of the interoperable health IT infrastructure initiatives show promising growth. The Interoperability Standards Advisory (ISA) process has emerged as “the model by which the Office of the National Coordinator for Health Information Technology (ONC) will coordinate the identification, assessment, and public awareness of interoperability standards and implementation specifications that can be used by the healthcare industry to address specific interoperability needs including, but not limited to, interoperability for clinical, public health, and research purposes” (ONC, 2017). The ISA document’s introduction is found in Appendix 4 of this paper. ISA’s “scope includes electronic health information created in the context of treatment, and subsequently used to accomplish a purpose for which interoperability is needed (e.g., a referral to another care provider, public health reporting, or research). In late 2017, and included in the 2018 Reference Edition, the ISA now also includes interoperability needs related to Administrative functions within healthcare. These additions were made through coordination with CMS, and it is anticipated to include other administrative healthcare interoperability needs throughout 2018” (ONC, 2017).

### Chapter 3: Methodology

#### Research Design

The research design is quantitative. An analysis assess levels of agreement with statement in a survey (Figure 2) completed by the sample population. The survey statements' subject matter is of primary care providers' interoperability capabilities, and degree to which the provider has implemented electronic health information exchange. The survey statements are associated with workflow processes that benefit from interoperability between providers, labs, hospitals and other stakeholders. The survey is based upon a five point scale. The more a respondent agrees with the statement the higher the number is assigned. The table below illustrates the values assigned to the survey respondents' selection choices:

**Survey Value Scale**

| <b>Value</b> | <b>Agreement</b>                    |
|--------------|-------------------------------------|
| 1            | Strongly Disagree-Never             |
| 2            | Disagree-Occasionally               |
| 3            | Neither Disagree or Agree-Sometimes |
| 4            | Agree-Most of the time              |
| 5            | Strongly Agree-Always               |

The “Strongly Disagree – Never” variable represents that the respondent never utilize electronic HIE. The respondent only use fax or hard copy paper as a method of exchanging information.

The “Disagree – Occasionally” variable represents that the respondent once in a while utilize electronic HIE. The respondent still mainly use fax or hard copy paper as a method of exchanging information. However, in some occasions the respondent utilized electronic HIE.

The “Neither Disagree or Agree – Sometimes” variable represents that the respondent half of the time utilize electronic HIE. The respondent use equally electronic HIE and fax or hard copy paper as a method of exchanging information.

The “Agree – Most of the Time” variable represents that the respondent usually utilize electronic HIE. The respondent only occasionally use fax or hard copy paper as a method of exchanging information.

The “Strongly Agree – Always” variable represents that the respondent always utilize electronic HIE. The respondent does not use fax or hard copy paper as a method of exchanging information. However, if there is a technology outage or the corresponding recipient is unable to receive electronic HIE, fax may be utilized.

### **Sample Population**

The sample population consists of primary care providers' (PCP) health information managers, practice office managers, medical records managers, and other individuals who have similar health information management and information exchange responsibilities. Primary care providers are defined as “specialists in Family Medicine, Internal Medicine or Pediatrics who provides definitive care to the undifferentiated patient at the point of first contact, and takes continuing responsibility for providing the patient's comprehensive care” (American Academy of Family Physicians, 2018). It is anticipated that the majority of primary care providers will be Generalist. Participants are not distinguished by age and gender. These are variables that are not relevant to the study. There is no distinction drawn between rural and metropolitan primary care practices' participants. Geographical variance is not part of this study. The providers who self-define as primary care providers and meet the study's definition of primary care provider are eligible to participate.

## **Data Collection**

Phone calls and email were the distribution methods for the survey. Participant were asked the survey questions over the phone or they were able to click on a link in the email to take the survey. The collection of the survey data was made from phone calls or through a secure login to SurveyMonkey.com. The researcher who obtain the data through phone calls manually entered the information into the study's survey hosted by SurveyMonkey. The researcher also made a log of relevant statements the respondents' used to elaborate on their survey responses.

The researcher explained the purpose of the survey to the phone participants or in the solicitation email (Figure 1). A timeline of one week for email survey responses was permitted. After one week, a follow-up email was sent to potential participants. A second week of collection time was given for additional survey to be received. The phone data collection was obtained over a period of three days at the end of the email campaign.

The participation requests were sent to AHIMA Engage Community members who identified themselves as working in the clinic/physician practice sector. Members with job titles such as Health Information Manager, Records Clerk, Office Manager and other similar job titles were selected. This ensures that respondents are individuals who utilize electronic HIE as part of their job responsibilities. The phone participants were those individuals who handled HIE request at their primary care practice.

The IRB approved research sites are located at 15 Windy Acres Drive, Trenton, GA 30752 and 311 West Cedar Street, El Dorado, AR 70731.

## **Data Collection Instrument**

The data collection instrument is a survey that utilizes a rating scale to determine which survey statement that the respondent has experienced and to what degree. Survey statements are

composed so that the response “strongly agree-always” represents the situation the primary care facility most often encounters or uses as their primary method of HIE. A five point scale for each of the statements is used. The variables counted in the collection instrument are as follows:

1. Local hospital electronic HIE

Rationale: The utilization of electronic health information exchange with hospitals may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

2. Outsource Labs electronic HIE

Rationale: The utilization of electronic health information exchange with Laboratories may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

3. Pharmacy electronic HIE

Rationale: The utilization of electronic health information exchange with hospitals may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

4. Patient Portal electronic HIE

Rationale: The utilization of electronic health information exchange with patients may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

5. Specialist electronic HIE

Rationale: The utilization of electronic health information exchange with specialists may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

6. Local and state repository electronic HIE

Rationale: The utilization of electronic health information exchange with hospitals may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

7. Third Party electronic HIE

Rationale: The utilization of electronic health information exchange with third party may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

8. Cost barrier to electronic HIE utilization

Rationale: The maintenance and implementation cost of electronic health information exchange may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

9. Training barrier to electronic HIE utilization

Rationale: The required employee training of using electronic health information exchange technology may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

10. Lack of Interoperability with non-associated organizations

Rationale: Interoperability with non-associated organizations' systems may be a factor in determining the progress primary care practices have made towards 100% electronic HIE implementation.

### **Risk Assessment**

Prior to the research being performed, the risk associated with participation in the research was estimated to be minimal. Two risks variables are identified. The risk that survey

respondents may feel uncomfortable answering the survey questions is assessed to be occasional, 6-20 times out of every 100. The risk of loss of confidentiality for the survey participants is considered very rare, 1 time out of every 100. Data is stored on a password protected database and laptop. Participant contact information is keep in a password protected excel spreadsheet file. The file will be destroyed three months after completion of the study. Furthermore, all copies of electronic files will be deleted from the laptop. Any paper-based data collection forms will be shredded three months after the conclusion of the study.

Once the research was completed the risk of the survey participants that may feel uncomfortable answering the survey question actually was much higher than anticipated. Seven out of 24 potential participants, 29%, refused or were unavailable to complete the survey.

| <b>Risk Description</b>   | <b>Rate Assessed</b>   | <b>Actual Rate</b> |
|---|------------------------|--------------------|
| Risk that survey respondent may feel uncomfortable answering the survey questions | Occasional<br>6-20/100 | 7/24               |
| Risk of loss of confidentiality for the survey participants                       | Rare<br>1/100          | 0/100              |

## **Chapter 4: Results**

### **Response Rate of Population**

There were two disseminations made of email letters (Figure 1) requesting recipient participation in this study. Seventy-five emails were sent out on the first distribution. This request yielded 4 responses. A 5.3% participation rate. The second email dissemination was sent to 57 potential participants. Zero responses were received from this request. Each request allowed the respondents 7 days to complete the survey. Phone participation requests were also completed. A total of 20 primary care practices were called. Out of the 20 solicitations, 10 individuals agreed to answer the survey questions. Two respondents stated that their practice outsourced their medical records. One respondent said their practice did not use electronic medical records. They were still using paper medical records. The remaining seven respondents refused or were unavailable to participate. Thus, the phone requests yielded a 50% participation rate.

### **Frequency Tables**

Tables 1 through 10 show the count and percentage item results for each of the survey statements. Specifically, Tables 1 through 7 provides the response information that determines to what extent the sample population has electronic health information exchange with business partners. Tables 8 through 10 provides the response information that identifies possible barriers to full implementation and utilization of electronic health information exchange by the sample population.

Only 21.4% (Table 1) of the respondents confirmed that their primary care practice electronically exchange health information with their local hospital. Another 14% indicated that they sometimes exchange health information electronically. The respondents that answered

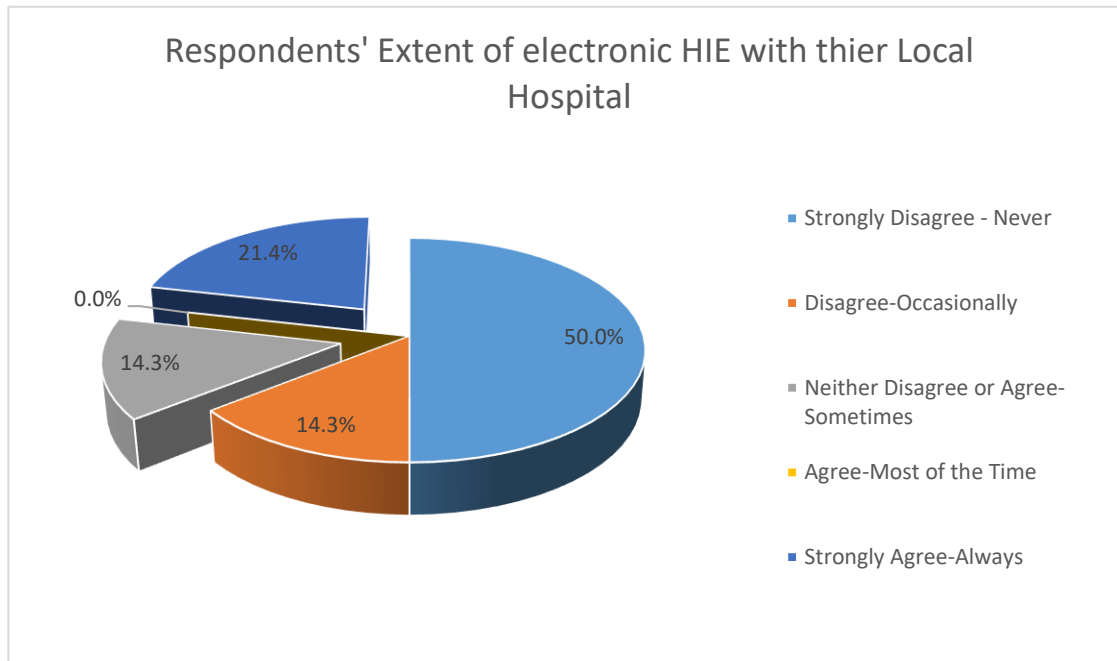


sometimes used both electronic exchange and fax method. The results show that only 35.7% of the respondents exchanged health information electronically as part of their daily workflow protocols.

Table 1

Survey Statement 1: Our primary care practice's EHR is fully compatible and has 100% electronic health information exchange with our local hospital

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 7                  | 50.0%                        |
| Disagree-Occasionally                | 2                  | 14.3%                        |
| Neither Disagree or Agree- Sometimes | 2                  | 14.3%                        |
| Agree-Most of the Time               | 0                  | 0.0%                         |
| Strongly Agree-Always                | 3                  | 21.4%                        |
| <b>Total</b>                         | <b>14</b>          | <b>100%</b>                  |



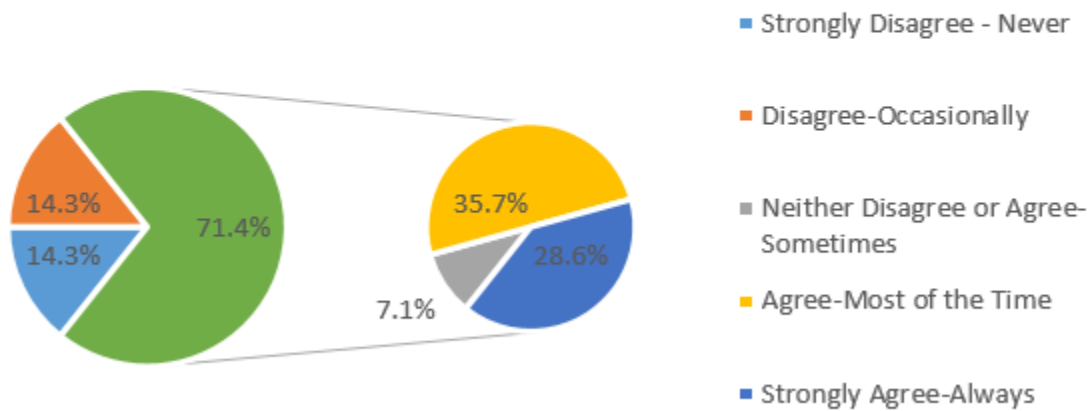
Respondents identify that 71.4% (Table 2) of them electronically exchange health information with outsource labs on a regular basis.

Table 2

Survey Statement 2: Our primary care practice's EHR is fully compatible and has 100% electronic health information exchange with the outsource Labs we use

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 2                  | 14.3%                        |
| Disagree-Occasionally                | 2                  | 14.3%                        |
| Neither Disagree or Agree- Sometimes | 1                  | 7.1%                         |
| Agree-Most of the Time               | 5                  | 35.7%                        |
| Strongly Agree-Always                | 4                  | 28.6%                        |
| Total                                | 14                 | 100.0%                       |

### Respondents' Extent of electronic HIE with thier Outsource Labs



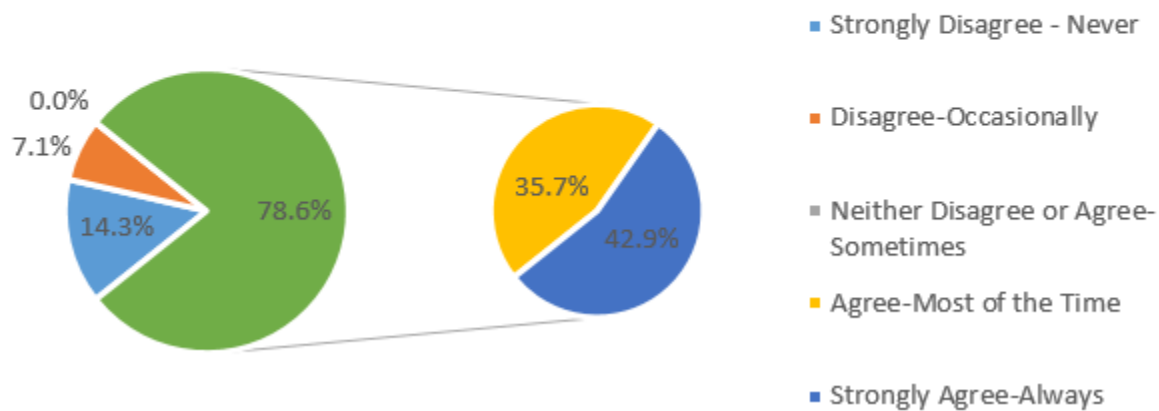
Additionally, 78.6% (Table 3) of the respondents indicate that they electronically exchanged health information with their local pharmacy.

Table 3

Survey Statement 3: Our primary care practice's EHR is able to electronically send patient prescriptions to our local pharmacy

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 2                  | 14.3%                        |
| Disagree-Occasionally                | 1                  | 7.1%                         |
| Neither Disagree or Agree- Sometimes | 0                  | 0.0%                         |
| Agree-Most of the Time               | 5                  | 35.7%                        |
| Strongly Agree-Always                | 6                  | 42.9%                        |
| Total                                | 14                 | 100.0%                       |

### Respondents' Extent of electronic HIE with thier Local Pharmacy

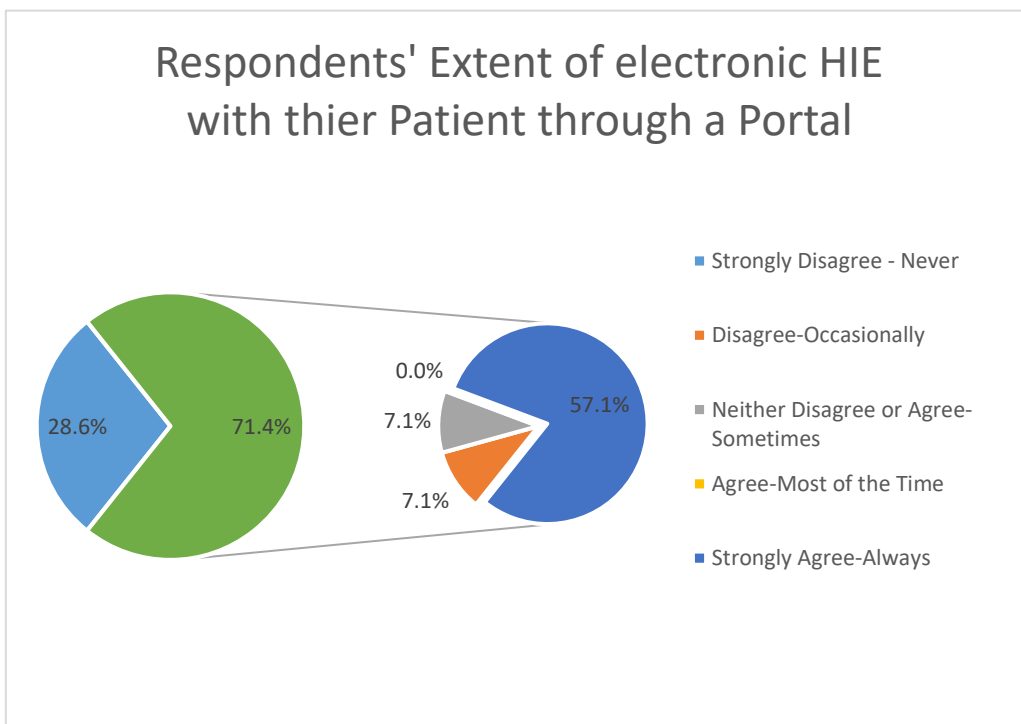


In regards to the patient portals, the respondents indicate 57% (Table 4) of the time, as their primary care practice possessing and using patient portals. Another 14%, 2 out of 14 survey completion respondents, stated that they have patient portals that are not setup yet.

Table 4

Survey Statement 4: Our primary care practice has a patient portal used to share health information electronically with our patients

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 4                  | 28.6%                        |
| Disagree-Occasionally                | 1                  | 7.1%                         |
| Neither Disagree or Agree- Sometimes | 1                  | 7.1%                         |
| Agree-Most of the Time               | 0                  | 0.0%                         |
| Strongly Agree-Always                | 8                  | 57.1%                        |
| <b>Total</b>                         | <b>14</b>          | <b>100.0%</b>                |

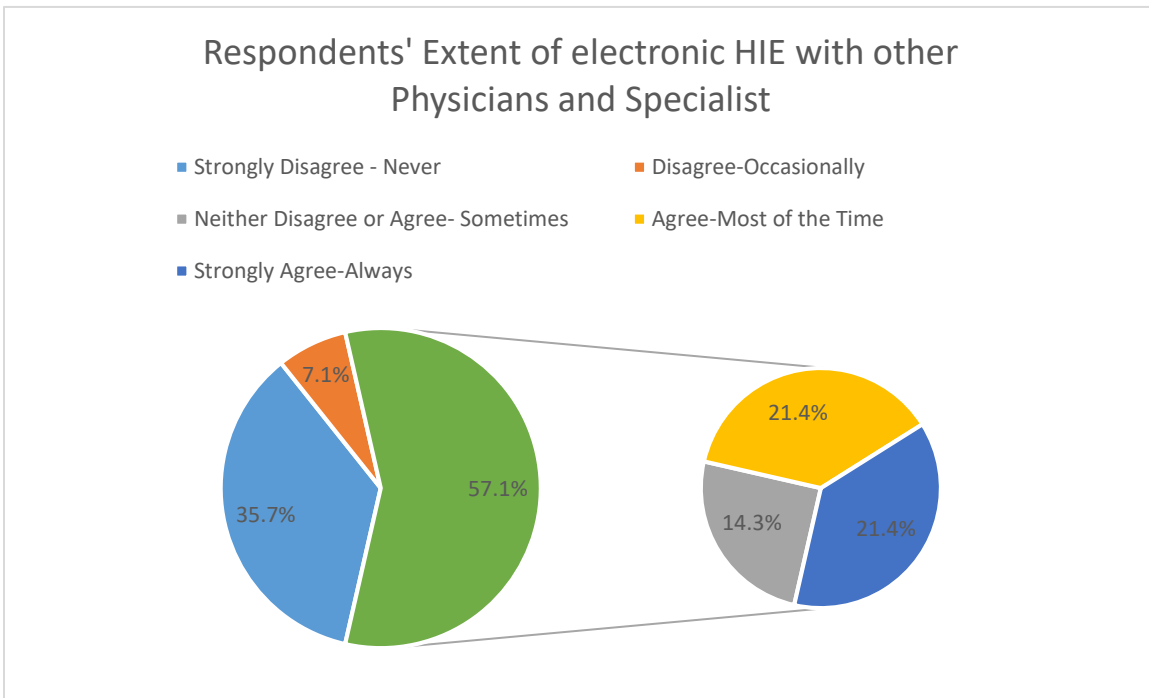


A good amount, 57.1% (Table 5) of respondents share health information electronically with specialists and other physicians regularly.

Table 5

Survey Statement 5: Our primary care practice electronically shares health information with other physicians and specialists our patients' see

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 5                  | 35.7%                        |
| Disagree-Occasionally                | 1                  | 7.1%                         |
| Neither Disagree or Agree- Sometimes | 2                  | 14.3%                        |
| Agree-Most of the Time               | 3                  | 21.4%                        |
| Strongly Agree-Always                | 3                  | 21.4%                        |
| <b>Total</b>                         | <b>14</b>          | <b>100%</b>                  |

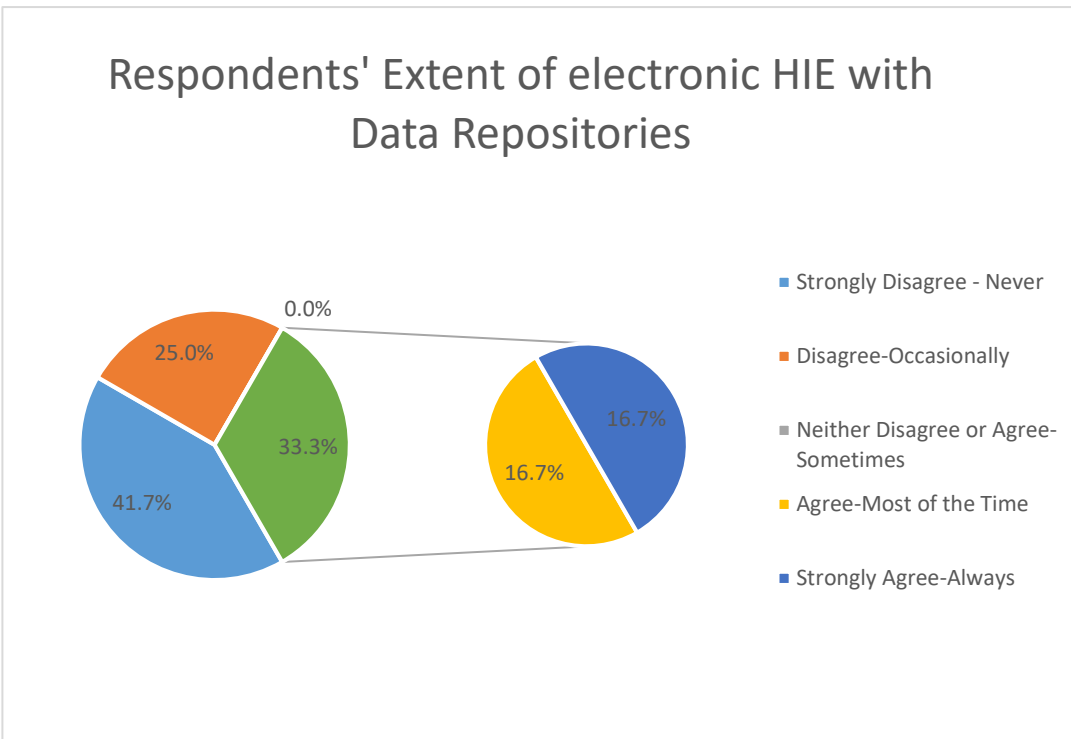


The majority of primary care practices still report health information to local and regional data repositories using fax. Only 33.3% (Table 6) of primary care providers exchange health information electronically with their state healthcare authorities.

Table 6

Survey Statement 6: Our primary care practice electronically contributes health information to a local or regional data repository

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 5                  | 41.7%                        |
| Disagree-Occasionally                | 3                  | 25.0%                        |
| Neither Disagree or Agree- Sometimes | 0                  | 0.0%                         |
| Agree-Most of the Time               | 2                  | 16.7%                        |
| Strongly Agree-Always                | 2                  | 16.7%                        |
| <b>Total</b>                         | <b>12</b>          | <b>100.0%</b>                |



Third party electronic reply of information appears not to be widely practiced. At least 78% (Table 7) of respondents indicated that they never, occasionally, or only sometimes replied to third party information request electronically. Approximately 43% of the respondents identified security concerns exchanging PHI electronically (Table 7 Note).

Table 7a

Survey Statement 7: Our primary care practice has the ability to electronically request of information by third parties

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 7                  | 50.0%                        |
| Disagree-Occasionally                | 1                  | 7.1%                         |
| Neither Disagree or Agree- Sometimes | 3                  | 21.4%                        |
| Agree-Most of the Time               | 3                  | 21.4%                        |
| Strongly Agree-Always                | 0                  | 0.0%                         |
| <b>Total</b>                         | <b>14</b>          | <b>100.0%</b>                |

\*Six respondents indicated security concerned with exchanging PHI electronically = 43% or Respondents

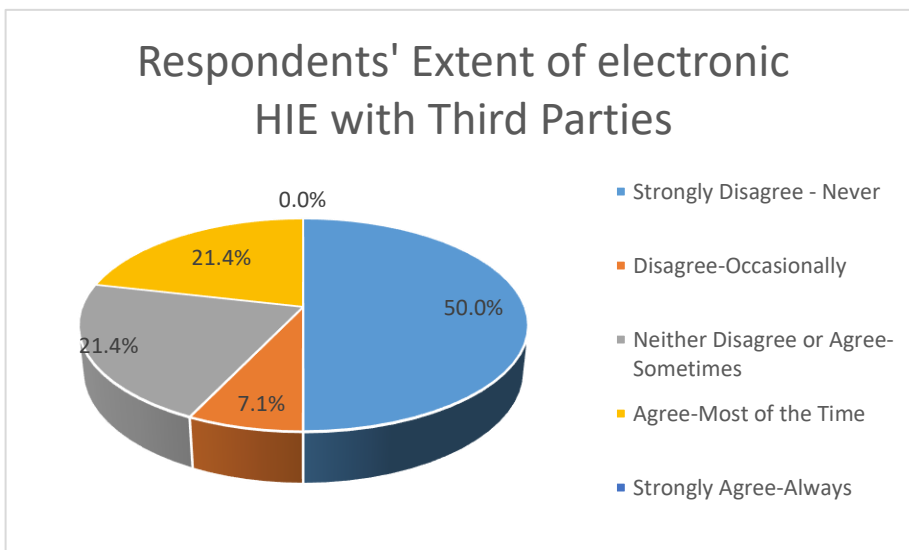
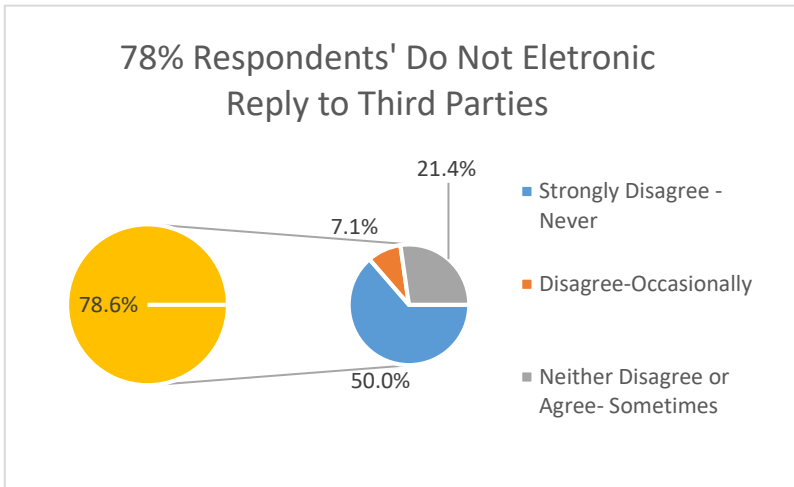


Table 7b





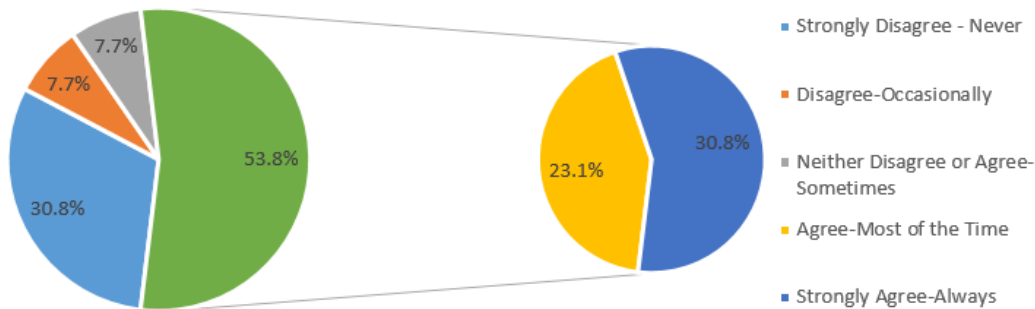
Almost Fifty-four percent (Table 8) of respondents believe that cost is a barrier to obtaining complete electronic health information exchange. Another 7.7% indicated that they felt sometimes cost was a barrier.

Table 8

Survey Statement 8: Cost is the largest barrier to our Primary Care Practice's ability to obtain complete electronic health information exchange

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 4                  | 30.8%                        |
| Disagree-Occasionally                | 1                  | 7.7%                         |
| Neither Disagree or Agree- Sometimes | 1                  | 7.7%                         |
| Agree-Most of the Time               | 3                  | 23.1%                        |
| Strongly Agree-Always                | 4                  | 30.8%                        |
| Total                                | 13                 | 100.0%                       |

### Respondents who Believe Cost is the Largest Barrier to Electronic HIE



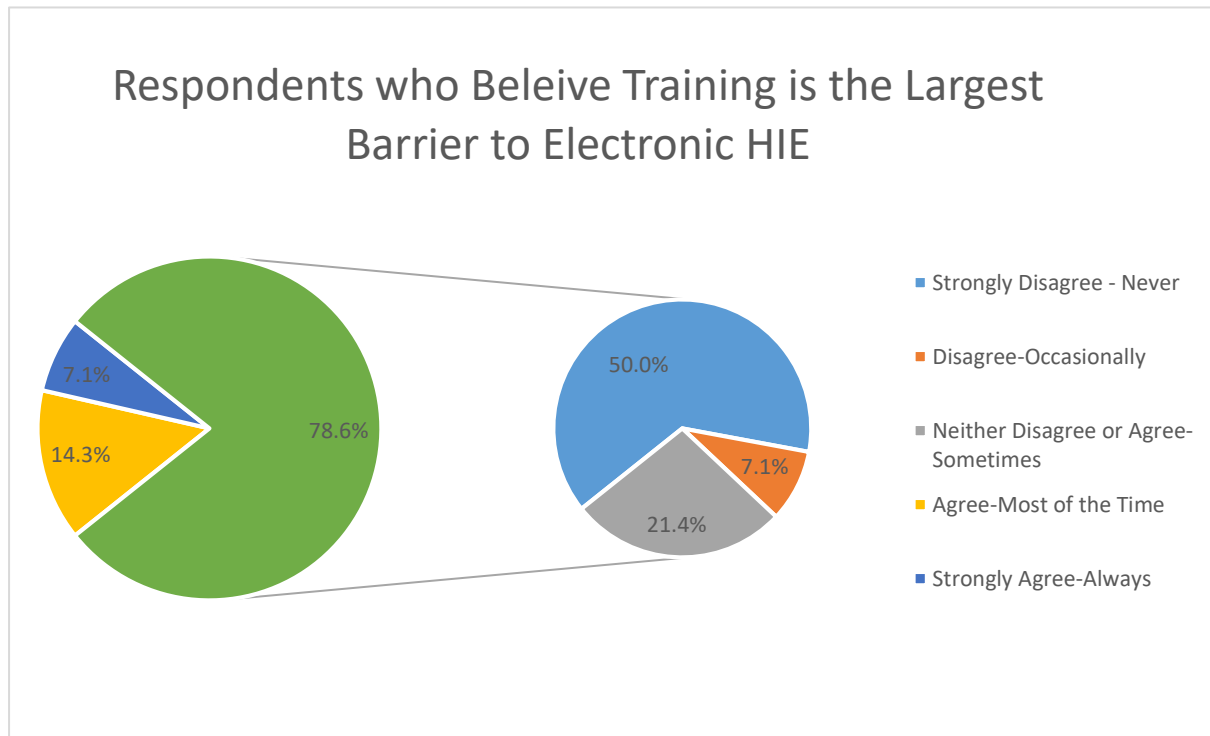
This leaves 38.5% of the respondents believing that cost has little or no influence on the practices ability to implement electronic health information exchange.

In addition, 78.6% (Table 9) of respondents indicated that they believe that training has only some or no effect on the implementation and utilization of electronic HIE.

Table 9

Survey Statement 9: User Training is the largest barrier to our primary care practice's ability to obtain complete electronic health information exchange

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 7                  | 50.0%                        |
| Disagree-Occasionally                | 1                  | 7.1%                         |
| Neither Disagree or Agree- Sometimes | 3                  | 21.4%                        |
| Agree-Most of the Time               | 2                  | 14.3%                        |
| Strongly Agree-Always                | 1                  | 7.1%                         |
| <b>Total</b>                         | <b>14</b>          | <b>100%</b>                  |

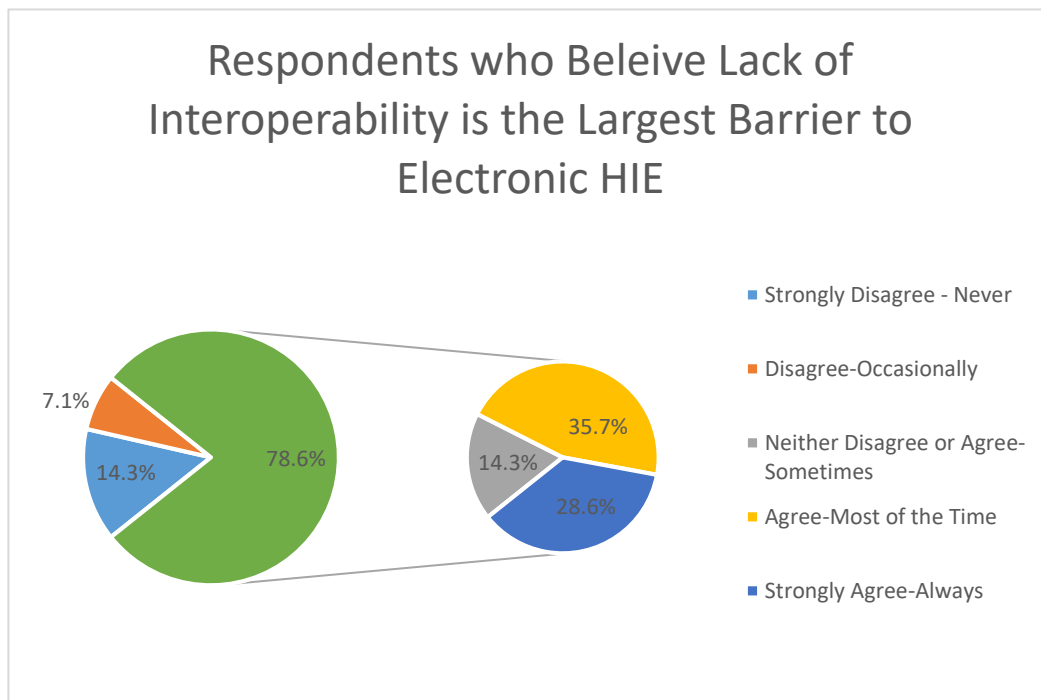


Conversely, the majority of survey respondents specified that lack of interoperability with non-associated practices was a barrier to achieving industry-wide electronic health information exchange. Respondents indicated 78.6% (Table 10) of the time that they have experienced lack of interoperability as a barrier to electronic HIE.

Table 10

Survey Statement 10: Lack of interoperability is the largest barrier to our primary care practice's ability to obtain complete electronic health information exchange

| Degree of Agreement                  | No. of Respondents | Percent of Total Respondents |
|--------------------------------------|--------------------|------------------------------|
| Strongly Disagree - Never            | 2                  | 14.3%                        |
| Disagree-Occasionally                | 1                  | 7.1%                         |
| Neither Disagree or Agree- Sometimes | 2                  | 14.3%                        |
| Agree-Most of the Time               | 5                  | 35.7%                        |
| Strongly Agree-Always                | 4                  | 28.6%                        |
| <b>Total</b>                         | <b>14</b>          | <b>100.0%</b>                |

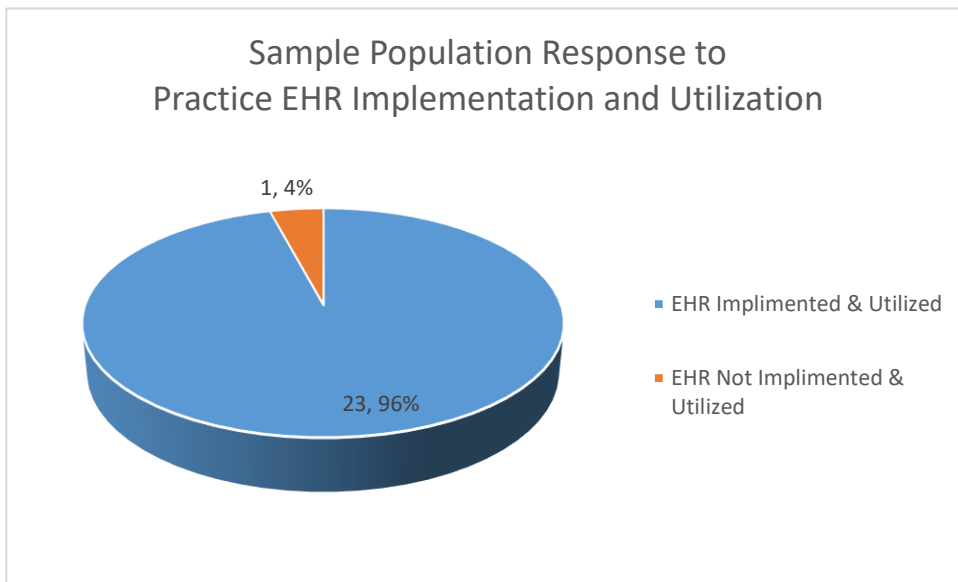


Only a small percentage, 1 out of 24, in this study, of respondents do not have an EHR implemented into their medical practice.

Table 11

**Sample Population Response to Practice EHR Implementation and Utilization**

| <b>Response</b>                | <b>Number of Respondents</b> |
|--------------------------------|------------------------------|
| EHR Implemented & Utilized     | 23                           |
| EHR Not Implemented & Utilized | 1                            |
| <b>Total</b>                   | <b>24</b>                    |



## Chapter 5: Analysis

The research has revealed that a significant portion of the participating primary care practices have the capability in their EHR system to electronically share health information with most patient service partners. The partners include hospitals, labs, specialist, pharmacies, and state repositories. However, many of those same practices are still using fax as their primary method of sending and receiving health information. This is confirmed through obtaining additional information during the phone survey interviews. Five out of the 10, 50%, phone respondents stated that their EHR has the capability to electronically exchange health information but they still use fax as their primary method of HIE. The 50% statistic is not scientifically verified. Only some of the phone participants provided additional information beyond answering the specific survey question. As a result, the number may be higher than just 50%.

There are two exceptions to fax being used as the primary method of PHI exchange. The PCP typically use electronic HIE to communicate with both laboratories and pharmacies. Respondents identified that over 72% of the time they used electronic HIE. Fax was used only if a transmission was not received or that the collaborating party did not have the ability to electronically exchange information.

Primary care practices providing patient portals are starting to become a common occurrence. Seventy-one percent of the respondents indicated that their primary care practice were in the development of; or already utilizing patient portals for electronic health information exchange (Table 4). Through additional conversation with phone respondents, it appears that patient portals are used to provide a wide-range of protected health information to their patients. Patients are able to receive lab results, refill prescriptions, setup appointments, message their

provider, and pay their bill all through the patient portal. Data that was used to make these assumptions was not scientifically gathered. The information is documents during phone conversations with respondents (Figure 4). However, not every respondent provided explanations and feedback to their survey question responses.

The low rate of electronic communication with third-parties, survey question seven, was contributed to security and privacy concerns. Respondents specified that electronic communication was less secure than fax communication. The conversation log (Figure 4) documented that six respondents express security and privacy concerns with third-party electronic communication. Respondents indicated that they trusted the security guards that their secured fax machine providers. They did not trust that electronic communication was secure. Nonetheless, HIPAA's "Privacy Rule allows covered health care providers to share protected health information for treatment purposes without patient authorization, as long as they use reasonable safeguards when doing so. These treatment communications may occur orally or in writing, by phone, fax, e-mail, or otherwise" (HHS, 2018).

Electronic health information exchange with local pharmacies has the highest occurrence rate with almost 79% respondents in this study using electronic HIE most of the time. "E-prescribing, or electronic prescribing is a technology framework that allows physicians and other medical practitioners to write and send prescriptions to a participating pharmacy electronically instead of using handwritten or faxed notes or calling in prescriptions" (Rouse, 2018).

The survey responses are mixed as to if cost influences the implementation and utilization of electronic HIE. Many EHR systems are already implemented into primary care practices. This may be the reason that 61.5% of respondents believing that cost does influence their practices utilization of electronic HIE, it deems that further analysis is warranted. It needs

to be determined if those who deem cost as a barrier took advantage of the EHR incentive payment program during Stage 1 of Meaningful Use. This statistic aligns with the ONC's analysis at the end of 2016 (Figure 5). The ONC states that "as of the end of 2016, over 60 percent of all U.S. office-based physicians (MD/DO) have demonstrated meaningful use of certified health IT in the Centers for Medicare and Medicaid Services (CMS) Electronic Health Record (EHR) Incentive Programs. Over twenty percent of nurse practitioners (NPs) and 2 percent of physician assistants (PAs) have demonstrated meaningful use of certified health IT" (ONC, 2018).

### **Limitations**

The research sample is limited to primary care providers, PCPs. Geographical location and size of the primary care practices are not identified for the sample population. As long as, the PCP meets the America Academy of Family Physicians' 2018 definition of Primary Care Provider the respondent is eligible to participate in the study.

## **Chapter 6: Conclusion**

Electronic Health Information Exchange will someday be the standard in the primary care sector of the U.S. healthcare industry. However, there are still hurdles to overcome in order for this to be reality. Current, daily workflow protocols are hampering the full utilization of HIE capabilities in primary care practices.

Utilization of EHR systems in the primary care sector are well established in 2018. This is a significant advancement because EHRs are the technology infrastructure needed for electronic health information exchange to take place.

An e-prescription system allows primary care physicians to electronically send prescriptions to pharmacies. This system allows interoperability between a PCP's EHR System and the pharmacies e-prescription system. It is my assumption that this technology framework could be used to solve interoperability issues between primary care facilities, laboratories, hospitals, specialists, regional coops, and public health authorities. This would lead to a much higher utilization of electronic HIE in the health care industry. Certified EHR vendors are required to design their programs to meet certain standards. The standards, possibly, could be used to develop EHR interfaces so that the entire health care system may achieve electronic HIE.

### **Recommendations**

This leads to my recommendation that additional research needs to be performed on electronic HIE. Questions that arose during the analysis of the data are as follows:

1. Does most EHRs possess the technology to electronically share protected health information?



2. To what extent are primary care practices still using fax as their primary source of HIE even though their EHR is capable of electronically exchanging PHI; and Why?
3. How informed are the individuals who do or could send PHI electronically with the regulations that oversee this type of transaction.

This research study provides a glimpse into the utilization of electronic HIE by primary care providers.

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**Figure 1: Survey Consent and Cover letter**

Dear EHR Managers:

You are invited to participate in a research study that will explore to what degree primary care facilities are electronically exchange health information. This study is being conducted by Susan M. Heyde and her research committee from the Department of Health Informatics and Information Management at the University of Tennessee Health Science Center. The purpose of this study is to assess if primary care providers are experiencing barriers to HEI and interoperability with hospitals, laboratories, and regional data collecting repositories.

In this study, you will be asked to complete an electronic survey. Your participation in this study is voluntary and you are free to withdraw your participation from this study at any time. The survey should take only less than 5 minutes to complete.

This survey has been approved by the Institutional Review Board of the University of Tennessee Health Science Center. There are no risks associated with participating in this study. The survey collects no identifying information of any respondent. All of the response in the survey will be recorded anonymously.

While you will not experience any direct benefits from participation, information collected in this study may encourage individuals and organizations develop solutions to the reported barriers.

If you have any questions regarding the survey or this research project in general, please contact Susan Heyde or her advisor Dr. (Name) at (Email or Ph no). If you have any questions concerning your rights as a research participant, please contact the IRB of the University of Tennessee Health Science Center at (Email or Ph no).

By completing and submitting this survey, you are indicating your consent to participate in the study. Your participation is appreciated.

Susan M. Heyde, MA, Masters' Student, the University of Tennessee Health Science Center.  
Advisor Dr. (Name), Department of HIIM, the University of Tennessee HSC.

**Please complete the attached survey and provide us with your feedback no later than Month, Day, 2017?**

**This invitation does not imply any endorsement of the survey research and/or its findings by the AANA. The survey contents and findings are the sole responsibility of the individual conducting the survey.**

*Letter Source:* <https://www.aana.com/.../research/.../cover%20letter%20example.doc>

Figure 2

**Survey Questions**

1. Our primary care practice's EHR is fully compatible and has 100% electronic health information exchange with our local hospital.
2. Our primary care practice's EHR is fully compatible and has 100% electronic health information exchange with the outsource Labs we use.
3. Our primary care practice's EHR is able to electronically send patient prescriptions to our local pharmacy.
4. Our primary care practice has a patient portal used to share health information electronically with our patients.
5. Our primary care practice electronically shares health information with other physicians and specialists our patients' see.
6. Our primary care practice electronically contributes health information to a local or regional data repository.
7. Our primary care practice has the ability to electronically reply to request of information by third parties.
8. Cost is the largest barrier to our Primary Care Practice's ability to obtain complete electronic health information exchange.
9. User Training is the largest barrier to our primary care practice's ability to obtain complete electronic health information exchange.
10. Lack of interoperability is the largest barrier to our primary care practice's ability to obtain complete electronic health information exchange.

Figure 3: Respondents Source Pie Chart

| Respondents  |             |
|--|-------------|
| Source   | Respondents |
| Email Surveys  | 4           |
| Phone Surveys  | 10          |
| Respondents who Refused Or were unavailable to complete the survey | 7           |
| Medical Records Outsourced   | 2           |
| Paper Medical Records  | 1           |
| <b>Total</b>   | <b>24</b>   |

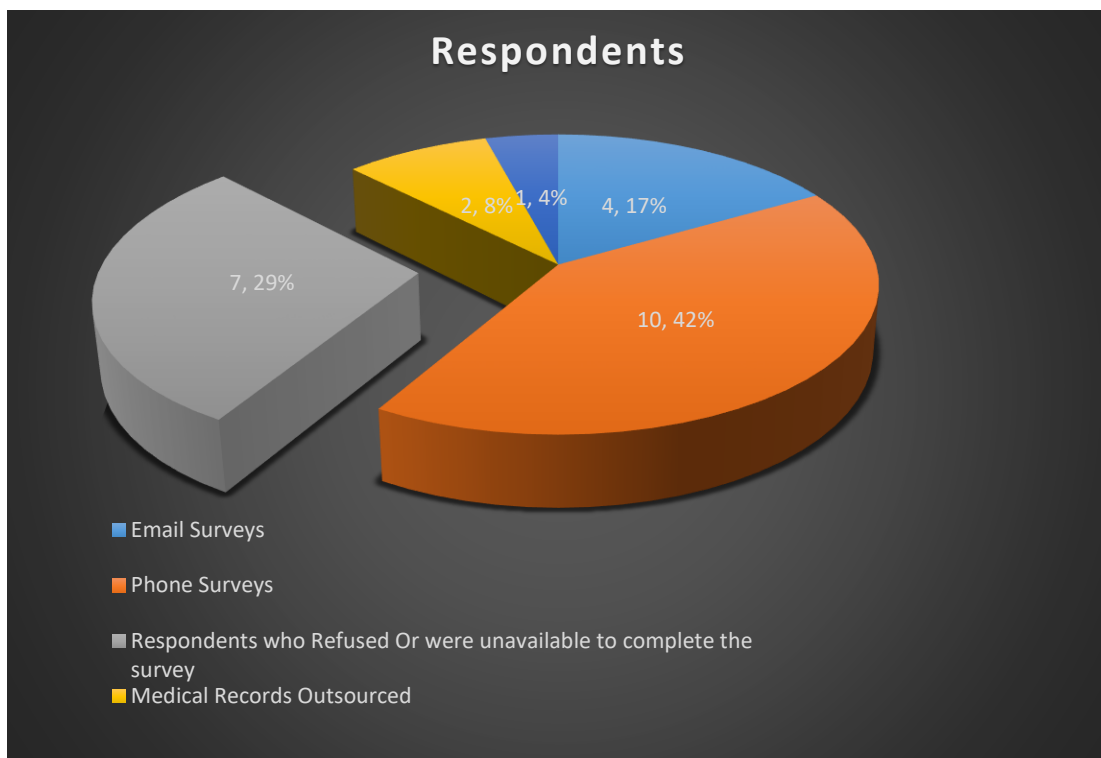


Figure 4

**Survey Questions Conversation logs**

1. "Our EHR system has the ability to electronically exchange health information but we prefer to use fax." Several respondents similarly stated the same thing.
2. "The patient portal allows patients to refill orders, make appointments, review lab results, leave messages for the provider, and pay their bill."
3. Six respondents express security and privacy concerns with third-party electronic communication. Respondents indicated that they trusted the security guards that their secured fax machine providers. They did not trust that electronic communication was secure.
4. Participants stated that on continuous occasions they would use fax to exchange information because the recipients did not receive the information electronically.
5. "We need to use the fax to ensure the privacy and security of patient information"

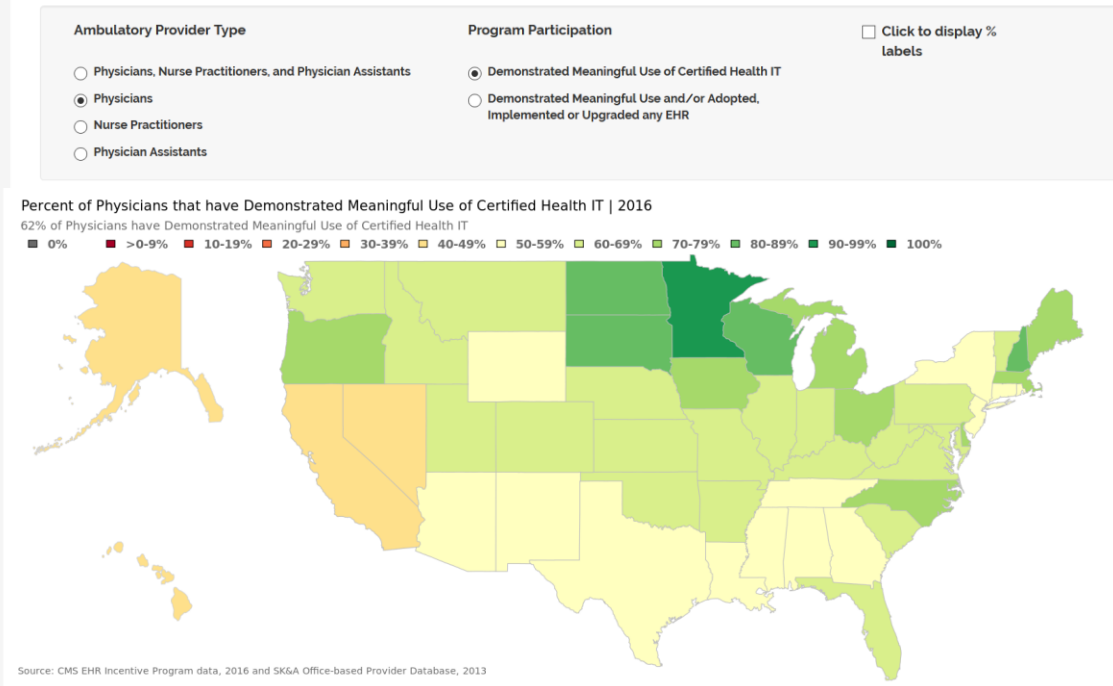


Figure 5

### Office-based Health Care Professional<sup>[2]</sup> Participation in the CMS EHR Incentive Programs

Over 60 percent of all office-based physicians<sup>[2]</sup> have demonstrated meaningful use of certified health IT

2016



**Source:**

[1] CMS EHR Incentive Programs data, 2016.

[2] SK&A office-based provider database, 2013. ONC uses this database to estimate the number of physicians (MD/DO), PAs, and NPs in each state. State and county calculations can be accessed through the [Office-based Provider database data page](#).

**Notes:**

See the [/data](#) page (*keyword: meaningful use*) to access this and other data related to the EHR Incentive Programs.

Appendix 1

**MEMORANDUM OF UNDERSTANDING**

**BETWEEN**

**THE UNITED STATES DEPARTMENT OF HEALTH  
AND HUMAN SERVICES**

**AND**

**THE EUROPEAN COMMISSION**

**ON**

**COOPERATION SURROUNDING HEALTH RELATED INFORMATION AND  
COMMUNICATION TECHNOLOGIES**

- (1) The United States Department of Health and Human Services (HHS) represented by the United States Secretary of Health and Human Services Kathleen Sebelius and the European Commission (EC) represented by its Vice-President Neelie Kroes:

recognize the importance of health-related information and communication technologies (eHealth/health IT) in promoting individual and community health while fostering innovation and economic growth;

wish to facilitate more effective use of health-related information and communication technologies in health care delivery including disease-prevention and health-promotion services; and

intend to strengthen their relationship and support global cooperation in the area of health related information and communication technologies.

- (2) The overarching goal of eHealth/health IT is to support health of population including healthy ageing, healthcare, and innovation activities. Such activities would include effective universal provision of electronic prescribing and clinical decision support, as well as to enhance the capacity and use of eHealth/health IT to support and advance other critically important health related activities such as clinical research.
- (3) This Memorandum of Understanding outlines an approach to foster mutual understanding of challenges faced by both sides in advancing the effective use of eHealth/health IT.
- (4) The approach outlined in this Memorandum of Understanding is in accordance with the following general objectives and principles:

The scope of this Memorandum of Understanding is cooperation on topics directly pertaining to the use and advancement of eHealth/health IT, in pursuit of improved health and health care delivery as well as economic growth and innovation.

Any cooperative activities related to the scope of this Memorandum of Understanding that the parties may choose to undertake will be conducted on the basis of reciprocity and mutual benefits.

This Memorandum of Understanding is intended to support and strengthen relationships currently established as well as to facilitate creation of new relationships in areas of mutual interest.

- (5) Intending to strengthen the existing linkages between them, the US Department of Health and Human Services and the European Commission anticipate pursuing the following actions for the identified areas of cooperation:

- (a) Discuss development of a global conceptual framework that articulates how health-related information and communication technologies support improved health. This framework is also expected to address the assessment of the economic benefits of eHealth/health IT, and the promotion of continuous innovation.
  - (b) Identify the challenges, shared goals and potential actions of mutual benefit in activities which are viewed as having the potential to support innovation and economic growth by supporting improved health. Shared understanding in these areas would facilitate specific actions and could be the basis for future international cooperation.
- (6) The following issues are mutually viewed to hold immediate importance and potential for the HHS and EC shared goals.
- (a) Development of internationally recognized and utilized interoperability standards and interoperability implementation specifications for electronic health record systems that meet high standards for security and privacy protection.
  - (b) Strategies for development of a skilled health IT workforce and of eHealth/health IT proficiencies in the health professional workforce such that these clinicians can fully utilize the technology's potential to enhance their professional experience and performance.
- (7) The potential activities foreseen within the framework of this Memorandum of Understanding include the following:
- (a) exchanges of information on ongoing activities that are carried out directly by the HHS and the EC and that are relevant to the goals at hand, with the information potentially exchanged in various forms convenient to the HHS and EC and effective for the purpose of the exchange, to include minutes of meetings, and economic and technical reports produced within or related to such ongoing activities relevant to the goals at hand;
  - (b) exchanges of delegations and specialists, selected with the endorsement of the HHS and the EC, with such delegations to be set up within existing consensus-building initiatives involving the HHS and the EC, as for example the EC's eHealth Governance Initiative;
  - (c) establishment of joint working groups to identify specific strategies for achieving shared goals, members of which would, as in previous point, be selected with the endorsement of the HHS and the EC; and
  - (d) collaboratively organized meetings, scientific conferences, workshops and/or symposia.

- (8) All activities undertaken pursuant to this Memorandum of Understanding are subject to the applicable laws and regulations in the USA and the EU and subject to the availability of respective resources.
- (9) This Memorandum of Understanding is effective from the day of its signing.
- (10) This Memorandum of Understanding may be modified at any time by mutual written consent of the HHS and the EC.
- (11) This Memorandum of Understanding does not constitute an international agreement and does not create rights and obligations governed by international law.

Signed, in duplicate, at Washington, DC this seventeenth day of December, 2010.

**FOR THE US DEPARTMENT OF  
HEALTH AND HUMAN SERVICES**

**FOR THE EUROPEAN COMMISSION**

          /Kathleen G. Sebelius/            
Kathleen G. **SEBELIUS**  
Secretary of Health and Human Services

          /Neelie Kroes/            
Neelie **KROES**  
Vice-President

Appendix 2



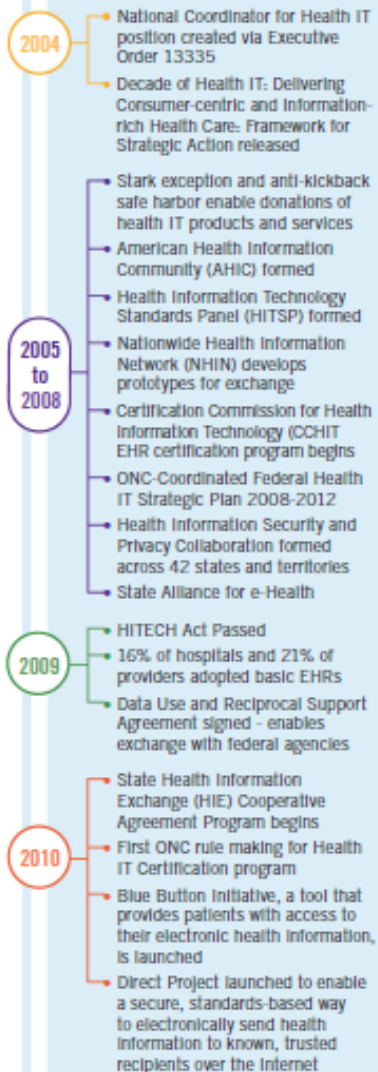
# Executive Summary

The nation needs an interoperable health system that empowers individuals to use their electronic health information to the fullest extent; enables providers and communities to deliver smarter, safer, and more efficient care; and promotes innovation at all levels. While the Health Information Technology for Economic and Clinical Health (HITECH) Act stimulated significant health information technology (health IT) adoption and exchange of electronic health information with the goal of every American having access to their electronic health information, 2015's interoperability experience remains a work in progress. The vision is a learning health system where individuals are at the center of their care; where providers have a seamless ability to securely access and use health information from different sources; where an individual's health information is not limited to what is stored in electronic health records (EHRs), but includes information from many different sources (including technologies that individuals use) and portrays a longitudinal picture of their health, not just episodes of care; where diagnostic tests are only repeated when necessary, because the information is readily available; and where public health agencies and researchers can rapidly learn, develop, and deliver cutting edge treatments.

If we steadily and aggressively advance our progress we can make it a reality. We must focus our collective efforts around making standardized, electronic health information securely available to those who need it and in ways that maximize the ease with which it can be useful and used.

The Office of the National Coordinator for Health IT (ONC) is committed to advancing this vision expeditiously, systematically and in a sustainable fashion. We first laid out this vision in [Connecting Health and Care for the Nation: A 10-Year Vision to Achieve an Interoperable Health IT Infrastructure](#) and followed with a draft [Shared Nationwide Interoperability Roadmap](#) and [Interoperability Standards Advisory](#). Working collaboratively with federal partners, states, consumers, and the private sector, we developed this shared, comprehensive interoperability agenda and action plan described in

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detail in the Shared Nationwide Interoperability Roadmap (the Roadmap). It is meant to build upon and shore up the existing foundation of health IT, move quickly to short-term success, and also lay out a longer term set of drivers and policy and technical components that will achieve the outcomes necessary to achieve the vision. ONC will continue to work with our partners as we coordinate the Roadmap's implementation, which is also a critical part of achieving the Federal Health IT Strategic Plan's vision of high-quality care, lower costs, healthy population, and engaged people.

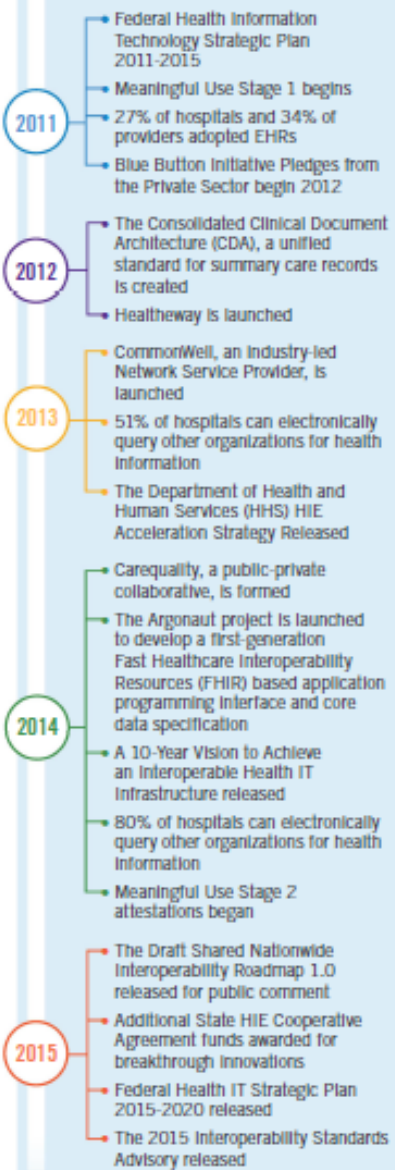
The Roadmap identifies near-term (i.e., by the end of 2017) actions and roles that health IT stakeholders should perform to make immediate progress and impacts with respect to interoperability. It also emphasizes that we should use and build on the technology and investments made to date, while continuing to seek out ways to support innovation and move beyond EHRs as the sole data source for electronic health information to a wide range of health information technologies used by individuals, providers, and researchers. The Roadmap's three high-level goals for health IT interoperability each reflect the progress we need to make in order to achieve a learning health system by 2024. Consequently, the short-term goal is focused on sending, receiving, finding, and using priority data domains, so that we can have an immediate impact on the care and health of individuals.

**The goals are:**

- **2015-2017:** Send, receive, find and use priority data domains to improve health care quality and outcomes.
- **2018-2020:** Expand data sources and users in the interoperable health IT ecosystem to improve health and lower costs.
- **2021-2024:** Achieve nationwide interoperability to enable a learning health system, with the person at the center of a system that can continuously improve care, public health, and science through real-time data access.

The Roadmap focuses deeply on the first priority goal and its accompanying milestones, critical action items, and commitments. To address current challenges, the Roadmap identifies four critical pathways that health IT stakeholders should focus on now in order to create a foundation for long-term success:

**INTEROPERABILITY PROGRESS**

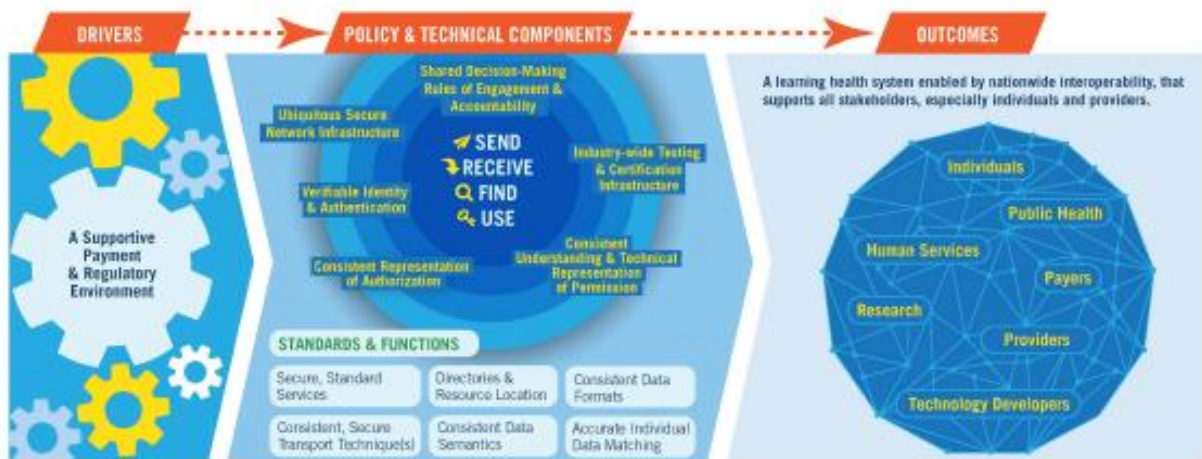




EXECUTIVE SUMMARY 

- Improve technical standards and implementation guidance for priority data domains and associated elements. In the near-term, the Roadmap focuses on using commonly available standards, while pushing for greater implementation consistency and innovation associated with new standards and technology approaches, such as the use of APIs.
- Rapidly shift and align federal, state, and commercial payment policies from fee-for-service to value-based models to stimulate the demand for interoperability.
- Clarify and align federal and state privacy and security requirements that enable interoperability.
- Coordinate among stakeholders to promote and align consistent policies and business practices that support interoperability and address those that impede interoperability.

The Roadmap is organized into three sections starting first with **"Drivers,"** which are the mechanisms that can propel development of a supportive payment and regulatory environment that relies on and deepens interoperability. The next section addresses **"Policy and Technical Components,"** which are essential items stakeholders will need to implement in similar or compatible ways in order to enable interoperability, such as shared standards and expectations around privacy and security. The last section addresses **"Outcomes,"** which serve as the metrics by which stakeholders will measure our collective progress on implementing the Roadmap. Each section includes specific milestones, calls to action, and commitments that will support the development of a nationwide, interoperable health IT infrastructure.



The Roadmap is intended to be a living document. As we move forward to create a learning health system, the Roadmap will be updated and new versions will be created when milestones are met and new challenges emerge. Future Roadmap versions will continue to be informed by and incorporate stakeholder feedback. ONC’s website will list calls to actions and commitments mapped out by stakeholder group so that all stakeholders can identify and do their part.



## Appendix 3

**Meaningful Use – Stage 3 Final Rule (2018)<sup>1</sup>**

Regulatory summary provided by ASA Quality and Regulatory Affairs (qra@asahq.org)

The Centers for Medicare & Medicaid Services (CMS) published its Medicare and Medicaid Programs: Electronic Health Record Incentive Program – **Stage 3** and Modifications to Meaningful Use in 2015 through 2017 Final Rule on October 16, 2015.

- Stage 3 meaningful use consists of **EIGHT OBJECTIVES** for Eligible Professionals (EPs) to meet. **Stage 3 is mandatory for all participants in 2018. EPs must report for the entire year.**
- Providers have the option of moving to Stage 3 in 2017.
- Stage 3 is the final stage of meaningful use.
- CMS has published a number of materials related to Meaningful Use rules. For additional materials on this rule, please review guidance materials from CMS.

**NOTE:** Anesthesiologists currently enjoy a hardship exemption from Meaningful Use. The hardship exemption is, by law, only available for anesthesiologists with a Medicare Provider Enrollment, Chain, and Ownership System (PECOS) designation of “05” through calendar year 2017. Under current law, anesthesiologists may need to participate in Meaningful Use once the exemption expires to avoid payment adjustments and to earn any incentive through MACRA.<sup>2</sup>

Please visit the Quality and Regulatory Affairs webpage, by scanning the QR Code on the right, later this year for additional information on Meaningful Use (EHR Incentive Program).

Below is a **summary chart** of the eight Stage 3 Objectives outlined by CMS in the Stage 3 Final Rule. EPs must also attest and report on Clinical Quality Measures.

**NOTE:** The chart below is **NOT** comprehensive in all rules and regulations guiding MU. The chart is intended to provider readers with a general understanding of MU Stage 3 requirements. Several of the objectives include exemptions. QRA **strongly encourages** EPs to read the Stage 3 rule and additional CMS guidance documents for clarification on each objective.

| OBJECTIVE                             | MEASURES AND DESCRIPTIONS   |
|---------------------------------------|---|
| Protect Electronic Health Information | Conduct or review a security risk analysis  |
| E-Prescribing                         | More than 60 percent of all permissible prescriptions, or all prescriptions, written by the EP are queried for a drug formulary and transmitted electronically using Certified EHR Technology (CEHRT)   |
| Clinical Decision Support (CDS)       | <b>Measure 1:</b> Implement five clinical decision support interventions related to four or more clinical quality measures at a relevant point in patient care for the entire EHR reporting period<br><b>Measure 2:</b> The EP has enabled and implemented the functionality for drug-drug and drug |

<sup>1</sup> The recipient(s) should review the attached resource(s) with appropriate legal counsel and make their own determinations as to relevance to their particular practice setting and compliance with State and federal laws and regulations. This document is intended as guidance and does not constitute legal advice. The document should not be construed as representing ASA policy (unless otherwise stated), making clinical recommendations, dictating payment policy, or substituting for the judgment of a physician and consultation with independent legal counsel.

<sup>2</sup> Meaningful Use (EHR Incentive Program) is being replaced by the Medicare Access and CHIP Reauthorization Act (MACRA) beginning in payment year 2019 (based upon 2017 MU participation). CMS has not finalized how participation and/or non-participation in MU will affect an anesthesiologist's participation in MACRA.

| OBJECTIVE  | MEASURES AND DESCRIPTIONS   |
|--|---|
|  | allergy interaction checks for the entire EHR reporting period  |
| Computerized Provider Order Entry (CPOE)           | <p><b>Measure 1:</b> More than 60 percent of medication orders created by the EP during the EHR reporting period are recorded using CPOE</p> <p><b>Measure 2:</b> More than 60 percent of laboratory orders created by the EP during the EHR reporting period are recorded using CPOE</p> <p><b>Measure 3:</b> More than 60 percent of diagnostic imaging orders created by the EP during the EHR reporting period are recorded using CPOE</p>  |
| Patient Electronic Access to Health Information    | <p><b>Measure 1:</b> For more than 80 percent of all unique patients seen by the EP, (i) the patient is provided timely access to view online, download, and transmit his or her health information; and (ii) the provider ensures the patient's health information is available for the patient to access using any application of their choice that is configured to meet the technical specifications of the API in the provider's CEHRT</p> <p><b>Measure 2:</b> The EP must use clinically relevant information from CEHRT to identify patient-specific educational resources and provide electronic access to those materials to more than 35 percent of unique patients seen by the EP during the EHR reporting period</p>   |
| Coordination of Care Through Patient Engagement    | <p>EP must satisfy 2 out of the 3 following measures (unless exemptions apply)</p> <p><b>Measure 1:</b> During the EHR reporting period, more than 10 percent of all unique patients seen by the EP actively engage with the EHR made accessible by the provider and either of the following: (i) view, download or transmit to a third party their health information; (ii) access their health information through the use of an API that can be used by applications chosen by the patient and configured to the API in the provider's CEHRT; or a combination (i) and (ii)</p> <p><b>In 2017 only:</b> An EP may meet a threshold of 5 percent instead of 10 percent</p> <p><b>Measure 2:</b></p> <p><b>In 2017 only:</b> For more than 5 percent of all unique patients seen by the EP during the EHR reporting period, a secure message was sent using the electronic messaging function of CEHRT, or in response to a secure message sent by the patient</p> <p><b>2018 and on:</b> For more than 25 percent of all unique patients seen by the EP during the EHR reporting period, a secure message was sent using the electronic messaging function of CEHRT to the patient, or in response to a secure message sent by the patient</p> <p><b>Measure 3:</b> Patient generated health data or data from a nonclinical setting is incorporated into the CEHRT for more than 5 percent of all unique patients seen by the EP</p> |
| Health Information Exchange                        | <p>The EP must attest to all three measures but must meet the threshold for 2 of the 3 measures</p> <p><b>Measure 1:</b> For more than 50 percent of transitions of care and referrals, the EP that transitions or refers their patient to another setting of care or provider of care (i) creates a summary of care record using CEHRT; and (ii) electronically exchanges the summary of care record</p> <p><b>Measure 2:</b> For more than 40 percent of transitions or referrals received and patient encounters in which the provider has never before encountered the patient, the EP incorporates into the patient's EHR an electronic summary of care document</p> <p><b>Measure 3:</b> For more than 80 percent of transitions or referrals received and patient encounters in which the provider has never before encountered the patient, the EP performs clinical information reconciliation. The EP must implement clinical information reconciliation for two of the following three clinical information sets: medication; medication allergy, current problem list</p>   |
| Public Health and Clinical Data Registry Reporting | <p>An EP must choose from measures 1 through 5 and must successfully attest to any combination of two measures:</p> <p><b>Measure 1:</b> Immunization registry reporting</p> <p><b>Measure 2:</b> Syndromic surveillance reporting</p> <p><b>Measure 3:</b> Electronic case reporting</p> <p><b>Measure 4:</b> Public health registry reporting</p> <p><b>Measure 5:</b> Clinical data registry reporting</p>   |

## Appendix 4

### **Introduction to the 2018 Interoperability Standards Advisory**

The Interoperability Standards Advisory (ISA) process represents the model by which the Office of the National Coordinator for Health Information Technology (ONC) will coordinate the identification, assessment, and public awareness of interoperability standards and implementation specifications that can be used by the healthcare industry to address specific interoperability needs including, but not limited to, interoperability for clinical, public health, research and administrative purposes. ONC encourages all stakeholders to implement and use the standards and implementation specifications identified in the ISA as applicable to the specific interoperability needs they seek to address. Furthermore, ONC encourages further pilot testing and industry experience to be sought with respect to standards and implementation specifications identified as “emerging” in the ISA.

The 2018 Reference Edition ISA reflects the numerous changes made across the ISA throughout 2017. To learn more about what has changed, refer to the Recent ISA Updates page, which provides a summary of major changes to the ISA. In addition, registered users may subscribe to change notifications to be alerted by e-mail of all revisions to individual interoperability needs or for ISA-wide changes. Anyone may become a registered user, by submitting an account request. Once logged in, look for the blue “change notification” button at the bottom of the interoperability need page, or at the bottom of the home page to be notified of any changes across the ISA.

For additional information about the ISA, including scope, purpose, structure, and an overview of the informative characteristics attributed to each standard/implementation specification, please see the Introduction text located at [www.healthit.gov/isa](http://www.healthit.gov/isa)

Appendix 5: Primary Care MIPS



### Merit-based Incentive Payment System Measures

for Primary Care Clinicians

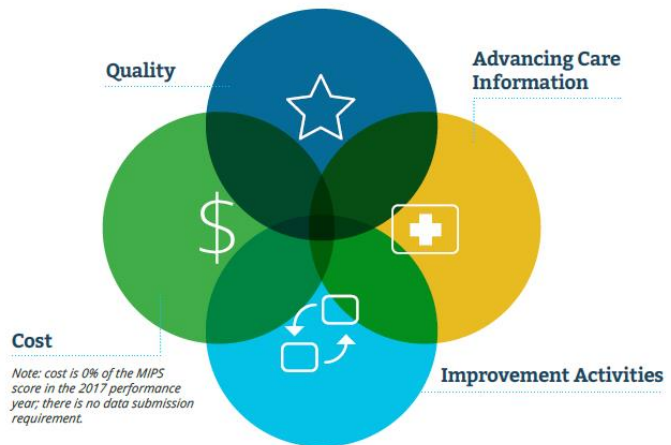
#### What is MIPS?

The Merit-based Incentive Payment System (MIPS) is one of the two tracks of the Quality Payment Program, which implements provisions of the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA).

Visit [QPP.CMS.GOV](http://QPP.CMS.GOV) to understand program basics, including submission timelines and how to participate.

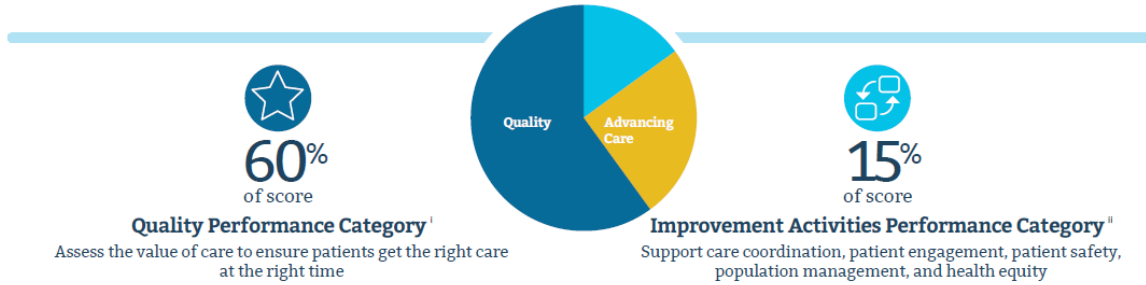
#### What are the Measures That I Must Submit to Successfully Participate in MIPS?

If you are participating in the Quality Payment Program through MIPS, you will be able to pick your pace the first year through three participation options—test, partial, and full. Your Medicare payment adjustment will be based on submitting data and your performance for the following MIPS categories:



### What Measures Do I Submit for Each Category in 2017?

This resource provides a non-exhaustive sample of measures that may apply to primary care clinicians. Make sure to consider your reporting method, practice size, patient mix, and performance period to choose the measures that best suit you. See a full list of measures at [OPP.CMS.GOV](http://OPP.CMS.GOV).



- Quality Performance Category<sup>1</sup>**  
 Assess the value of care to ensure patients get the right care at the right time
- Effectively treat Hemoglobin A1c in diabetic patients
  - Discuss and provide a care plan
  - Provide Influenza immunization
  - Conduct breast cancer screening
  - Provide BMI screening and follow up
  - Document current medications
  - Screen for tobacco use and provide cessation intervention
  - Control high blood pressure
  - Screen for alcohol use and provide counseling

- Improvement Activities Performance Category<sup>2</sup>**  
 Support care coordination, patient engagement, patient safety, population management, and health equity
- Clinicians choose activities they may participate in from among a [list](#). Some activities include:
- Provide 24/7 access to clinicians/groups who have real-time access to patient's medical record
  - Participate in systematic anticoagulation program
  - Implement anticoagulant management improvements
  - Use glycemic management services
  - Use Qualified Clinical Data Registry (QCDR) for feedback reports that incorporate population health
  - Participate in the Transforming Clinical Practice Initiative (TCPI)
  - Collect and follow up on patient experience and satisfaction data
  - Consult the Prescription Drug Monitoring Program
  - Engage new Medicaid patients and follow-up
  - Implement co-location primary care and mental health services
  - Implement integrated Primary Care Behavioral Health (PCBH) model

<sup>1</sup> 60% of final score for most MIPS eligible clinicians, unless they are in a MIPS APM  
<sup>2</sup> 15% of final score for most MIPS eligible clinicians, unless they are in a MIPS APM





**25%**  
of score

**Advancing Care Information Performance Category**  
*(continued)*

The performance score is calculated by using the numerators and denominators submitted for the specified measures included in the performance score, or for one measure (Immunization Registry Reporting measure), by the yes answer submitted.

MIPS eligible clinicians can earn bonus percentage points by doing the following:

- Reporting "yes" to 1 or more additional public health and clinical data registries beyond the Immunization Registry Reporting measure will result in a 5% bonus
- Reporting "yes" to the completion of at least 1 of the specified Improvement Activities using CEHRT will result in a 10% bonus

For more information on Advancing Care Information measures and requirements, see the Advancing Care Information fact sheet.



**0%**  
of score

**Cost Performance Category**  
Helps create efficiencies in Medicare spending

- No reporting requirement in 2017 (measures are calculated based on Medicare claims data but will not be used to determine your payment adjustment in the first payment year 2019 of the program)



For more information and a list of Advanced APMs that may be right for you, visit: [QPP.CMS.GOV](http://QPP.CMS.GOV)







25%  
of score

**Advancing Care Information Performance Category<sup>##</sup>**

Support the secure exchange of health information and the use of certified electronic health record technology (CEHRT)

The Advancing Care Information performance category score includes a base score, performance score and bonus score. Additionally, in 2017, there are two measure set options for reporting:

- Advancing Care Information Objectives and Measures
- 2017 Advancing Care Information Transition Objectives and Measures

MIPS eligible clinicians can report the Advancing Care Information objectives and measures if they have:

- Technology certified to the 2015 Edition; or
- A combination of technologies from the 2014 and 2015 Editions that support these measures

In 2017, MIPS eligible clinicians can alternatively report the 2017 Advancing Care Information transition objectives and measures if they have:

- Technology certified to the 2015 Edition; or
- Technology certified to the 2014 Edition; or
- A combination of technologies certified to the 2014 and 2015 Editions

MIPS eligible clinicians need to fulfill the requirements of all the base score measures in order to receive an Advancing Care Information performance category score. If the base score requirements are not met, they will get a 0 in the overall Advancing Care Information performance category score.

Primary care clinicians who are not designated as hospital-based or non-patient facing or who choose to submit as part of a group report on the following base measures:

- Security Risk Analysis
- e-Prescribing
- Provide Patient Access
- Send a Summary of Care and Request/Accept Summary of Care OR Health Information Exchange

<sup>##</sup> 25% of final score for most MIPS eligible clinicians, unless they are in a MIPS APM

