

HIMSS

2004 HIMSS NATIONAL HEALTH INFORMATION INFRASTRUCTURE SURVEY

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The 2004 HIMSS National Health Information Infrastructure Survey was designed to obtain a snapshot of healthcare professionals' views on the creation of a national health information infrastructure (NHII), including the components that should comprise the NHII, the barriers that will be experienced along the way and the standards that will be used to facilitate data sharing. This survey was supported by the Medical Records Institute the HIMSS Foundation and the HIMSS NHII Task Force.

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1. Executive Summary

The 2004 HIMSS National Health Information Infrastructure Survey was designed to obtain a snapshot of healthcare professionals' views on the creation of a national health information infrastructure (NHII), including the components that should comprise the NHII, the barriers that will be experienced along the way and the standards that will be used to facilitate data sharing. This survey was supported by the Medical Records Institute the HIMSS Foundation and the HIMSS NHII Task Force.

Significant findings include:

- Nearly half (42 percent) of respondents are familiar with, but are not participating in, the development of the NHII, as outlined by the National Committee on Vital and Health Statistics (NCVHS) in January 2002. Another seven percent of respondents are actively participating in the development of an NHII.
- Respondents were most likely to identify hospitals and ambulatory care facilities as the type of facility that should be included as part of a national medical information exchange.
- Nearly 80 percent of respondents presently indicate that they communicate information to public health agencies. Information about reportable diseases, such as SARS, is most frequently communicated.
- Patient access to online services is limited. Nearly half of the respondents report that their organization does not provide patients with online services, such as the ability to order a prescription refill. Only 20 percent indicate that their organization offers patients portal access to online services. Over 80 percent of the respondents who do not offer online portal access, a step toward a personal health record, indicate that this is because patients have not requested this service.
- Lack of agreed upon policies regarding access to patient information and lack of standards to support data sharing are two top barriers to the creation of an NHII. Respondents also identify the lack of defined return on investment, HIPAA privacy/security issues and lack of interoperability as key barriers.
- ICD-9, CPT and the HL7 Message Format Standards are three key standards that are used to communicate information to public health agencies and other outside organizations.

2. Methodology

In April 2004, HIMSS conducted a Web-based survey of healthcare professionals to obtain a snapshot of their views on the creation of a national health information infrastructure (NHII). The questions addressed the general attitudes about the creation of an NHII, those components that will be critical to the formation of a successful NHII and the barriers that will need to be overcome in the creation of the NHII. The HIMSS Foundation, the Medical Records Institute, and the HIMSS NHII Task Force supported the survey.

HIT professionals were made aware of the survey through a number of mechanisms. HIMSS members and other HIT professionals were extended an e-mail invitation on March 30, 2004. Two follow-up invitations were issued in April. Members of the Medical Records Institute were issued an invitation on April 16, 2004. Information about survey participation was included in electronic newsletters that were issued to HIMSS members throughout April. Finally, HIT professionals were able to access the survey through a portal on the HIMSS Web site. A total of 413 usable responses were received.

3. About the Respondents

Approximately one-third of survey respondents (32 percent) work at either a vendor or consulting firm (Figure 1). Another 30 percent work at either a stand-alone hospital or a hospital that is part of a multi-hospital system, and 14 percent work in an ambulatory care setting. Other types of organizations represented in this sample include military/VA healthcare organizations, university/academic settings, long-term care facilities, and public health organizations.

One-third of respondents are C-level executives (19 percent CIOs), with another 15 percent identifying themselves as department heads/directors (Figure 2). Approximately 13 percent of the sample identify themselves as consultants, and 12 percent are physicians. Other individuals represented in the sample include nurses, IT staff, and sales staff.

4. Familiarity with NHII

In January 2002, the NCVHS issued a report that recommended the development of an NHII. Since the release of this report, a great deal of interest and activity has developed regarding the NHII. Respondents were asked to identify their level of familiarity with that report, as well as their level of involvement in the development of an NHII (Figure 3). A breakdown of responses appears below:

- Not Familiar with NHII (16 percent)
- Limited Awareness of NHII (35 percent)
- Aware of NHII, but not Participating in Development (42 percent)
- Participating in Development of NHII (7 percent)

In September 2003, the HIMSS Vantage Point asked this same question. The data for this survey revealed that 37 percent of respondents were not familiar with the NHII, 35 percent had limited awareness, 28 percent were aware of the project, but were not participating in the development, and 4 percent were actively participating in the development. While a direct correlation cannot be drawn between these two groups because they are not necessarily the same respondents, there is a suggestion that these individuals responding to the 2004 HIMSS National Health Information Infrastructure Survey are more aware of NHII.

By type of workplace, those individuals who identify vendor organizations/consulting firms as their primary place of employment are more likely to be aware of (and participate in) the NHII project, with over half of the respondents in each group reporting this to be the case (Figure 4). Conversely, only 45 percent of those individuals working at a hospital and 25 percent of those working at ambulatory care facilities reported awareness/participation in the NHII project. In fact, over half of the respondents working in ambulatory care facilities reported that they had limited awareness of the NHII project.

Among those individuals identifying themselves as salespeople/consultants, 62 percent identified that they were aware of the NHII project (Figure 5). Nearly equal proportions of clinical staff, which includes physicians and nurses, are aware of the NHII project but not participating (40 percent) and have limited awareness of the NHII project (38 percent). Among C-level executives, including CIOs, nearly 44 percent indicate that they have limited awareness of the NHII project; only 37 percent are aware of the project. Almost 40 percent of directors/department heads report they have limited awareness of the NHII project.

Respondents were also asked to respond to several statements that would explore their opinions on the type of information exchange that an NHII could promote (Figure 6). The number of respondents agreeing with each statement is reported below:

- The need exists to rapidly and electronically share data among care providers such as physicians, nurses, case workers, and pharmacists (97 percent).
- There is a need to facilitate the capture and analysis of adverse events nationally to improve the quality and safety of patient care (93 percent).
- There is a need for public health data sent to one agency to be shared with others, especially in the event of an emergency (90 percent).

There is no statistical relationship between these statements and the type of organization at which an individual works, nor is there a statistical relationship between these statements and a respondent's title.

5. Which facilities should be part of an NHII

Respondents, who were asked to identify which types of facilities should be included as a part of a national medical information exchange, were most likely to identify hospitals (Figure 7). Overall, 92 percent of respondents indicated that hospitals should be part of this type of information exchange. Specifically, 92 percent of respondents indicated that hospitals with 200 or more beds should be part of such a network, while 88 percent of respondents indicated that hospitals with less than 200 beds should be a part of this type of network.

Approximately 88 percent of respondents indicate that ambulatory care facilities should be included in a national medical information exchange. However, respondents are more likely to indicate that larger practices should be included in the network.

- Medium/large physician practices—those with more than 10 physicians (86 percent)
- Small physician practices (76 percent)
- Solo practices (69 percent)

Not surprisingly, those individuals who work at an ambulatory care facility are more likely to indicate that ambulatory care facilities should be included in a national medical information exchange (95 percent—compared to 88 percent of the overall sample).

Most respondents also indicated that military (82 percent) and VA facilities (84 percent) should be included in the information exchange network. Respondents were less likely to identify value in including other types of healthcare facilities, such as free-standing emergency care centers (79 percent), pharmacies (76 percent), long-term care/nursing homes (69 percent), home health facilities (64 percent), and hospices (55 percent).

For all types of facilities, those individuals who indicate that they are aware of or are participating in the development of the NHII are more likely to indicate that facilities should be a part of an information exchange than are those who have limited or no awareness of the project (Figure 8).

6. Components of an NHII

Approximately two-thirds of the survey respondents (68 percent, n=282) indicated that they worked for a provider organization of some type. These individuals were asked to identify whether particular components of an NHII were in place at their organization.

Information Distribution

Respondents were asked to comment about the manner in which healthcare providers received information about a patient's past medical history from another provider (Figure 9). Over half of the respondents indicated that they did not receive this information via electronic means. Instead, information is either requested via phone and faxed to their office or the patient brought the information with them. Another five percent of respondents indicated that they e-mail requests, but continue to receive the information via fax. Only five percent of respondents are solely using electronic methods to request and receive data (this includes both looking up the data electronically and requesting and receiving information via e-mail). The remaining respondents utilize a combination of methods to receive their information. On average, most respondents indicated that their organization used only one or two methods to transmit data between providers.

With respect to specific methods utilized, respondents were most likely to report that they request information by phone and receive it via fax (79 percent) or that the patients bring their records with them (75 percent) (Figure 10). Respondents are much less likely to report utilizing an "electronic component" to receive these records. Only 29 percent look up a record electronically, while 12 percent request and receive records via e-mail.

Not surprisingly, compared to hospitals, ambulatory care facilities are much more likely to rely on manual methods for getting patient medical records (Figure 11). Nearly three-quarters of respondents who work for ambulatory care facilities (71 percent) identified this as the means by which they got records, compared to 54 percent of respondents who work in a hospital setting.

Data Security and Electronic Authorization

Respondents who work at provider organizations were also asked to identify how they facilitate electronic authorization for accessing confidential patient information. Just over one-third (37 percent) indicated that this need does not exist, as all access to patient records is through paper charts. Ambulatory care facilities are more likely (56 percent) than hospitals (32 percent) to report that they do not facilitate electronic authorization for patient records because all access at their facility is manual.

Among those respondents who indicate that they do access information electronically, 80 percent use multiple mechanisms to secure data. Password protection (88 percent) and HIPAA business agreements (61 percent) are used most frequently (Figure 12). Smart cards and biometrics were each identified by less than ten percent of respondents.

Information Exchange with Public Health Agencies

Approximately 80 percent of respondents indicated that they exchange at least one type of information with public health agencies. However, most respondents report only a handful of information (such as information about reportable diseases) to public health agencies. In fact, 45 percent of respondents report fewer than three data points to public health agencies.

Among those individuals who do communicate information to public health agencies, 78 percent indicate that they share information about reportable diseases, such as SARS and STDs (Figure 13). Another 57 percent of respondents indicate that their organization compiles requested healthcare statistics on an as needed basis. Also identified by nearly half of respondents are immunizations (47 percent) and administrative information (45 percent). Respondents who work for hospitals are not only more likely to indicate that their organization reports information to public health agencies than those who work for ambulatory care facilities, they are also more likely to exchange multiple items. One-third of respondents working for hospitals report that they exchange information in more than five areas, compared to only two percent of those respondents who work for an ambulatory facility.

Online Patient Services

Most respondents indicate that the online services offered to patients/consumers are limited. Half of the respondents indicated that they do not offer their patients/consumers the ability to access online services, and 22 percent indicate that they offer only one of the online services identified in this survey. There is no statistical relationship between the type of facility and whether or not they offer an online service.

Among those respondents who indicated that their facility offers patients access to information electronically, nearly three-quarters indicated that they offered education electronically (Figure 14). This was offered far more frequently than the next option, access to accepted health providers by health insurance plan, which was identified by one-third of respondents. Rounding out the top three is prescription refills, identified by 28 percent of respondents. Least frequently cited was scheduling laboratory results, which was identified by only six percent of respondents.

Personal Health Records-Portal Access

Nearly 80 percent of respondents indicate that the organization they work for does not provide a portal access to patients that supports online services with healthcare providers; only individuals who work for provider organizations were given the opportunity to respond to this question (Figure 15). Among those that do not offer these services, 83 percent indicate that this is because the services have not yet been requested by their patients/consumers. Approximately 20 percent indicate that these services are not offered for financial reasons, and 14 percent indicate these services are not offered due to legal issues.

Among the 20 percent of the sample that does offer online services with healthcare providers via a personal portal, 62 percent indicate that these services are used for general queries (Figure 16). Another 59 percent indicate that these services are used for condition or symptom specific queries, and 55 percent indicate that these services allow patients to make medication inquiries. Only 22 percent allow patients to correct or update personal health information.

There is no statistical relationship with respect to the type of facilities that have set up a personal portal to support online services.

7. Data Exchange to/from Personal Health Record

Among the respondents who report that they work for a provider organization, three-quarters (77 percent) indicate that their organization transmits data to a personal health record (PHR) (Figure 17). Among those respondents who do transmit information to a PHR, three-quarters indicate that they transmit a subset of personal health information, while 61 percent indicate that they transmit all personal health information. In addition, 53 percent indicate that they transmit monitoring device data and 18 percent report that they transmit data to a non-provider such as a school. Among the respondents who do not transmit data, nearly half report that they do not do so because this feature has not been requested, while two-thirds indicate that this type of exchange does not take place due to a lack of standards (Figure 18). There is no statistical relationship between the type of organization a person works for and the data that is transmitted to a PHR.

A similar number of respondents indicate that they receive information from a PHR. Among these respondents, nearly 70 percent report that they receive designated subsets of data, while 42 percent

report that they receive all personal health information. Nearly 40 percent report that they receive monitoring data device from a PHR, and 37 percent indicate that they receive personal health data from a non-provider such as a school. There is no statistical relationship between the type of organization a person works for and the data that is transmitted from a PHR.

8. Patient Identification

Those individuals that work for a provider organization were asked to identify the way in which they identify patients in their system (Figure 19). Respondents indicate that there are two primary ways in which patients are identified—44 percent work for an organization that assigns patients an identifier at the time of registration, while another third indicate that their organization uses a master patient index that uniquely identifies a patient within an IDN. Respondents who work at hospitals are more likely to report that their organization uses an MPI to identify patients; two-thirds use either an MPI that works across an LHII or one that uniquely identifies a patient within an IDN.

9. Standards

Most survey respondents (88 percent) indicate that they are using at least one standard to electronically communicate data to public health agencies (Figure 20). The three most frequently used standards are ICD-9 (55 percent), CPT (49 percent), and HL7 Message Format Standards (35 percent). For each of these standards, the percent of users is somewhat larger in the provider community. For example, 57 percent of the respondents working at ambulatory facilities and 68 percent of the respondents working at hospitals report that their organization uses ICD-9 standards. For CPT, these percentages are 52, and 61 and for HL7 Message Format, they are 20 percent and 43 percent. Ten percent or fewer respondents identify that their organization uses the following standards—clinical LOINC, CDT, IEEE 1073, and NCPDP Telecom and NCPDP Script.

Compared to public health agencies, respondents are more likely to use data standards to communicate information to others outside of their organization (Figure 21). While ICD-9, CPT, and HL7 Message Format Standards are still the most frequently used standards, respondents are seven to 15 percent more likely to report that they will use these standards than they will with public health organizations. Respondents who work for hospitals are more likely than the sample average to report that they communicate information outside their organizations using these standards.

10. Legal Constructs Needed to Share Patient Information

Respondents were asked to identify which of three types of legal constructs were necessary to allow the exchange of patient care information between diverse providers (Figure 22). Forty-three percent of respondents indicated that agreements should be penned individually between each care provider or care group. Another 43 percent of respondents indicated that legal agreements are only required for provider or care groups that are external to their organization. Only 14 percent of respondents indicated that no legal agreements are necessary.

While no statistical relationship exists between necessary legal constructs and type of organization or title, those individuals who are not familiar with the NHII are somewhat more likely (89 percent) to identify that legal constructs are needed to exchange patient information than the entire sample (86 percent) (Figure 23).

11. Barriers to the Creation of an NHII

Individuals were asked to identify which issues regarding data exchange were a barrier to the creation of an NHII (Figure 24). Lack of agreed upon policies/procedures regarding who may access patient information and under what conditions was selected most frequently, by 87 percent of respondents. Eighty-five percent of respondents indicated that standards are not in place to support the sharing of health data between providers, public health agencies or population health researchers. Selected by the fewest respondents was the notion that it is difficult to design the NHII when we do not know all of the individuals who will require access to patient information. This was identified by 53 percent of respondents.

There is no statistical relationship between the barriers to the creation of an NHII and an individual's title. With respect to organizational type, there are only two areas in which a relationship can be suggested. Three-quarters of respondents indicated that the need for a secure infrastructure that encrypts all patient information that is accessed electronically would be a barrier to the creation of an NHII; those working for provider organizations are more likely to identify this as a barrier.

- Entire Sample—76 percent
- Ambulatory Facilities—90 percent
- Hospitals—81 percent
- Other Facilities—77 percent
- Vendor/Consultant—64 percent

Respondents who work for provider organizations are also more likely than the overall sample to identify “difficult to design the NHII when we do not know all of the individuals who will require access to patient information” as a barrier to the NHII.

- Entire Sample—53 percent
- Hospitals—64 percent
- Ambulatory Facilities—58 percent
- Other Facilities—51 percent
- Vendor/Consultant—41 percent

Those individuals who are less familiar with the NHII are more likely to identify certain issues as barriers to the creation of an NHII compared to those who are either very familiar with the creation of an NHII or are participating in the development of the NHII. Statistically significant relationships exist for the following issues:

- No financial incentive to communicate with patients electronically—not familiar (83 percent)/familiar (76 percent)
- Difficult to design the NHII when we do not know all of the individuals who will require access to patient information—not familiar (58 percent)/familiar (46 percent)
- Communication sent to public agencies keeps patient identifiable information—not familiar (66 percent)/familiar (58 percent)

Respondents were also asked to identify, on a scale of one to nine¹, which items were a barrier to the formation of a local or national health information infrastructure (Figure 25). The financial cost of the system without defined return-on-investment was identified as being the most significant barrier, with an average score of 2.87. This was followed by HIPAA privacy/security issues (4.10) and lack of interoperability at healthcare organizations (4.10). Malpractice issues were the item that respondents indicated would have the least impact on the creation of an NHII, with an average score of 6.82. These barriers were broken down into three categories (high, medium and low)² to determine if there are any statistical relationships between perceived barriers and different constituencies, such as title, organization type and/or familiarity with the creation of an NHII.

HIPAA Privacy/Security Issues

HIPAA privacy/security issues were identified by respondents as one of the leading barriers to the formation of an NHII, second only to financial costs. Respondents who identify that they are familiar with/developing the NHII are less likely to identify this as a high priority (36 percent) than are those individuals who are not aware (or have limited awareness) of the NHII (58 percent).

¹ One is the most significant barrier and nine is the barrier that will have the least impact on the formation of an NHII

² High Priority = 1,2,3 Medium Priority = 4,5,6 and Low Priority = 7,8,9

Legal Issues

Legal issues was also identified as a significant barrier to the formation of an NHII. Those individuals who are not familiar with the NHII are more likely (48 percent) to identify this as a barrier, compared to those who are aware of/participating in the formation of an NHII (37 percent).

Lack of Interoperability/Integration

Nearly half (48 percent) of those respondents who are aware of/participating in the development of an NHII report that a current lack of interoperability/integration at healthcare systems is a significant barrier to the creation of an NHII, compared to only one-third of those respondents who have limited awareness of an NHII. Additionally, those individuals who work at ambulatory organizations report interoperability to be a more significant barrier (51 percent), compared to those who work at hospitals (31 percent). In fact, 37 percent of respondents who work at a hospital indicate that this will have little impact on the formation of an NHII. Among those respondents who work for vendor/consultant organizations, 43 percent indicate that lack of interoperability at healthcare organizations will significantly impact the formation of an NHII.

Resistance to Expending Resources without a Clear Plan

Resistance to expending resources on NHII until a clear plan develops had an average score of 4.96, placing it as a barrier that will have some impact on the formation of an NHII. Among those respondents that are not familiar with the NHII, nearly half indicate that this is a barrier that would have an average impact on the formation of an NHII. However, among those who are aware of/participating in the formation of an NHII, the respondents are evenly divided; approximately one-third of respondents identified this as a high, medium and low.

By organization type, those who work at ambulatory care facilities are most likely to identify this as a barrier that would have low impact on the formation of an NHII (44 percent). Those who work at a hospital (39 percent) and vendor/consulting firm (37 percent) were most likely to identify this as a barrier of medium significance.

By title, those respondents who identified themselves as a c-level executive (40 percent), director/department head (59 percent), or clinical staff (37 percent) were most likely to identify that this barrier would have a medium impact on the formation of an NHII. This can be compared to sales/consultants (41 percent), IT staff (45 percent) and other (41 percent), who were all most likely to identify this area as a significant barrier.

Unwilling to Share Information With Competitors

An unwillingness to share information with competitors was identified by the overall sample as a barrier that would have some impact on the formation of an NHII, having an average score of 5.45 on the scale of 1 to 9 earlier identified in this section. By organization type, those working at ambulatory facilities are most likely to identify this as a low priority (56 percent), compared to those who work at a hospital, who are most likely to identify this as a barrier that would be of medium significance (40 percent). Those who work at vendor/consulting firms are equally likely to identify this as a barrier of significant, medium and low impact.

12. Conclusion

There appears to be a growing awareness of the need to develop a National Health Information Infrastructure in the United States. Nearly half (42 percent) of respondents, who took this survey in April, are aware of the NHII, compared to 28 percent of respondents who answered a similar question in October 2003. While a direct comparison cannot be drawn, it does appear that efforts to promote this initiative in the past six months have had success.

Additionally, respondents report that their organizations are beginning to take steps needed to share information on a more global basis. Approximately 80 percent of respondents indicate that their organization communicates at least one data element, such as information regarding reportable diseases to public health agencies. However, there are still significant challenges ahead. Most respondents indicate that exchange of patient information between healthcare providers is still conducted manually; only one-third of the respondents indicate that clinicians at their organization access patient information from another provider electronically. The challenges are even more significant for those who work at ambulatory care organizations, where nearly three-quarters of respondents indicate that data transfer is manual (compared to half of those working for hospitals).

Also noted are significant educational challenges. While the survey used the term "Personal Health Record" in asking respondents for information, it is clear that the only functions being surveyed were part of a personal health portal, not a true personal health record. Also, the percentage of data that respondents indicated they send to both public health and personal health records is not supported by other responses, indicating confusion in response interpretation. As the NHII moves forward, it is evident that clarity in emerging term definitions is needed.

To overcome these barriers, individuals working on the development of the NHII are going to have to come to agreement on a set of policies/procedures regarding who may access patient information, provide healthcare organizations with a defined return-on-investment and address HIPAA privacy and security issues. They are also going to have to address infrastructure issues, such as standards development that will promote the utilization of standards that support the sharing of health data between providers, public health agencies, and population health researchers and, ultimately, with consumers and patients.

13. About HIMSS

HIMSS (Healthcare Information and Management Systems Society) is the healthcare industry's membership organization exclusively focused on providing leadership for the optimal use of healthcare information technology and management systems for the betterment of human health. Founded in 1961 with offices in Chicago, Washington D.C., and other locations across the country, HIMSS represents more than 14,000 individual members and some 220 member corporations that employ more than 1 million people. HIMSS frames and leads healthcare public policy and industry practices through its advocacy, educational and professional development initiatives designed to promote information and management systems' contributions to ensuring quality patient care. Visit www.himss.org for more information.

14. How to Cite This Study

Individuals are encouraged to cite this report and any accompanying graphics in printed matter, publications, or any other medium, as long as the information is attributed to the 2004 HIMSS National Health Information Infrastructure Survey.

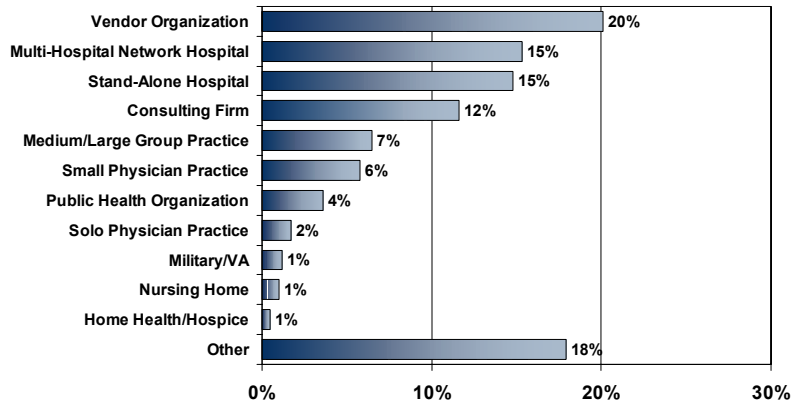
15. For More Information

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APPENDIX ONE—FIGURES

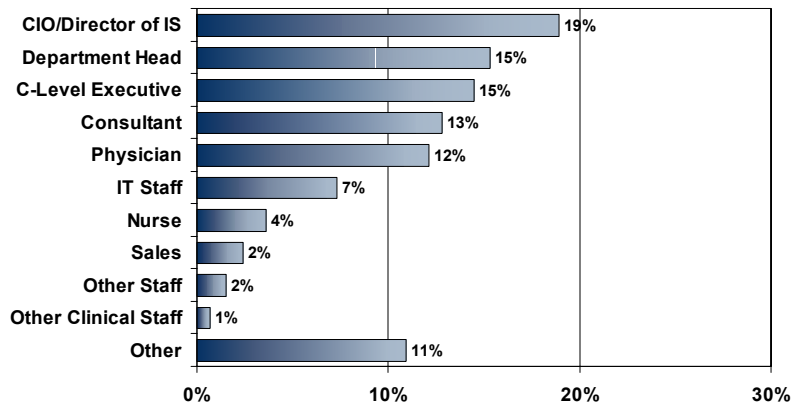
Primary Workplace

Figure 1



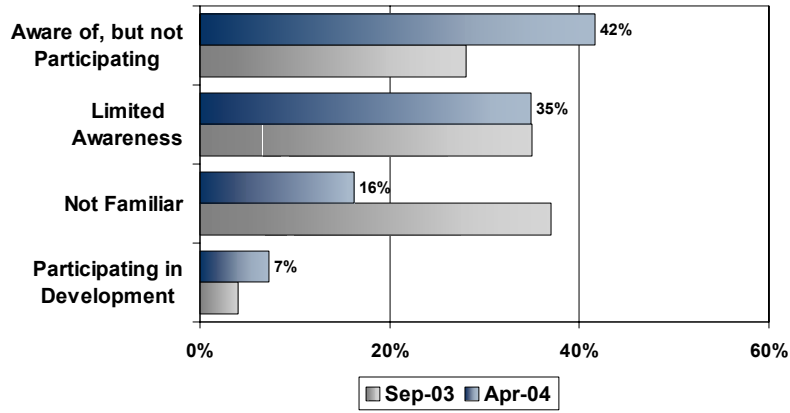
Respondent Titles

Figure 2



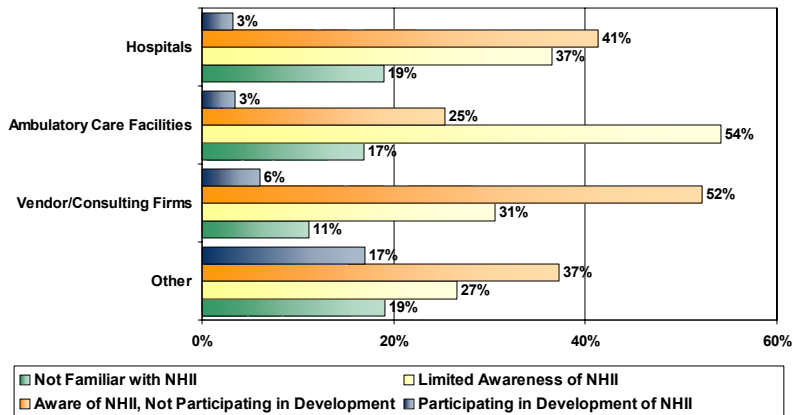
Familiarity with NHII

Figure 3



Familiarity with NHII (by Organization Type)

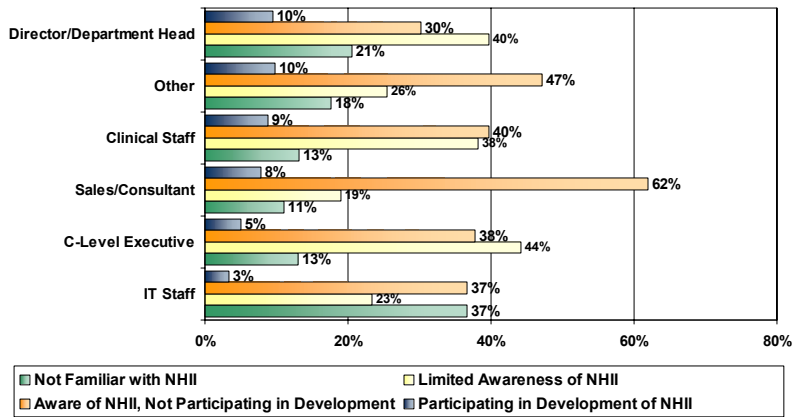
Figure 4



Familiarity with NHII

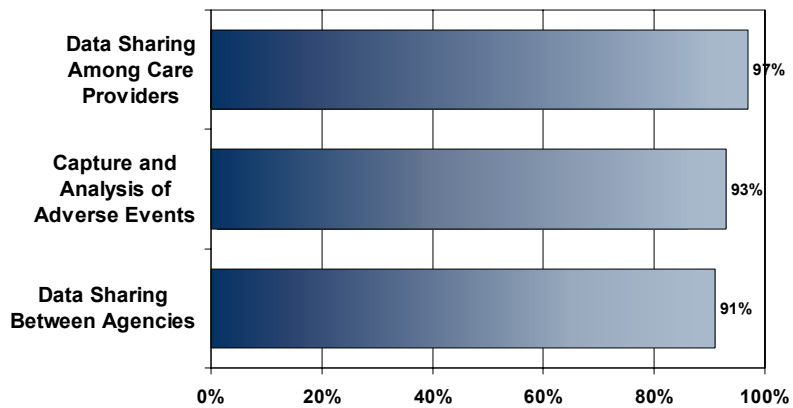
(by Respondent Title)

Figure 5

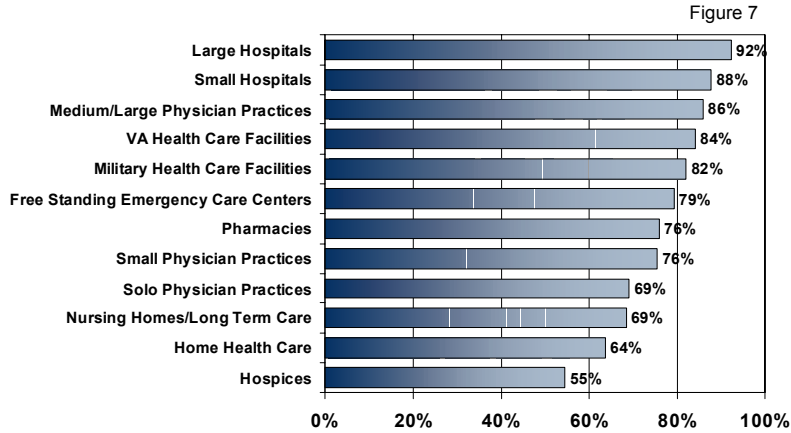


Data Sharing and the NHII

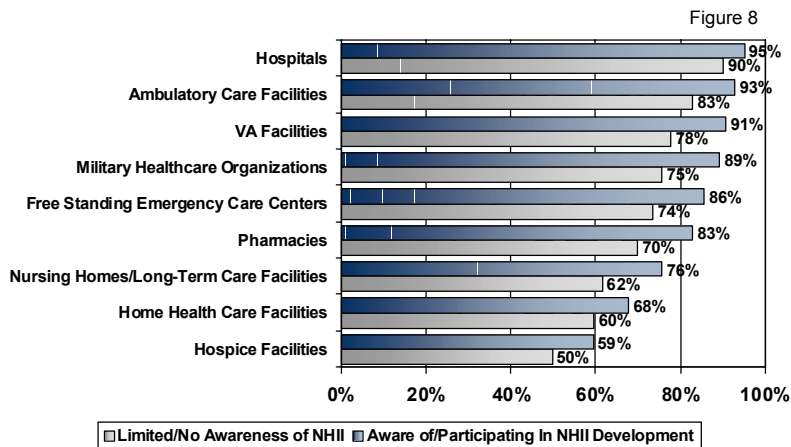
Figure 6



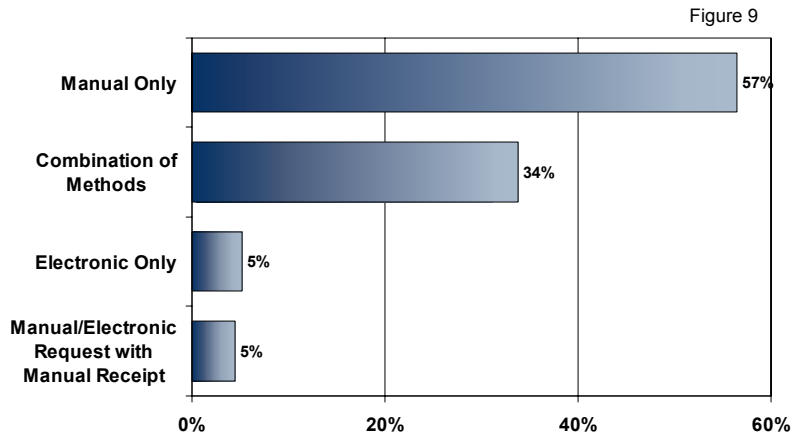
Organizations That Should Be Part of a National Medical Information Exchange Network



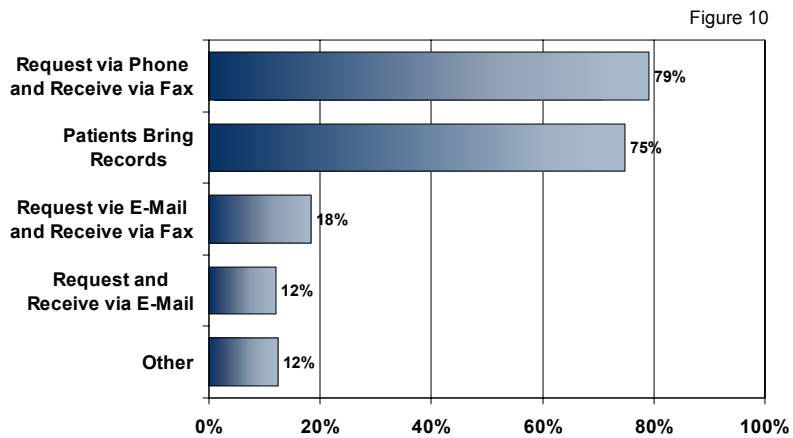
Familiarity with NHII (by Provider Type)



Preferred Method for Obtaining Patient Past Medical History Information

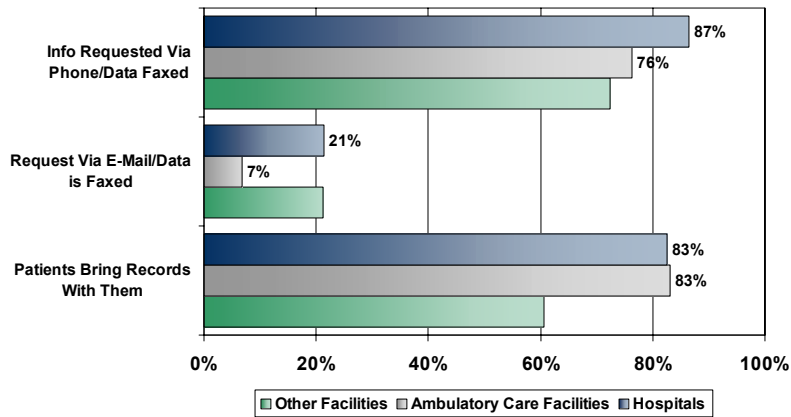


Specific Methods for Obtaining Patient Past Medical History Information



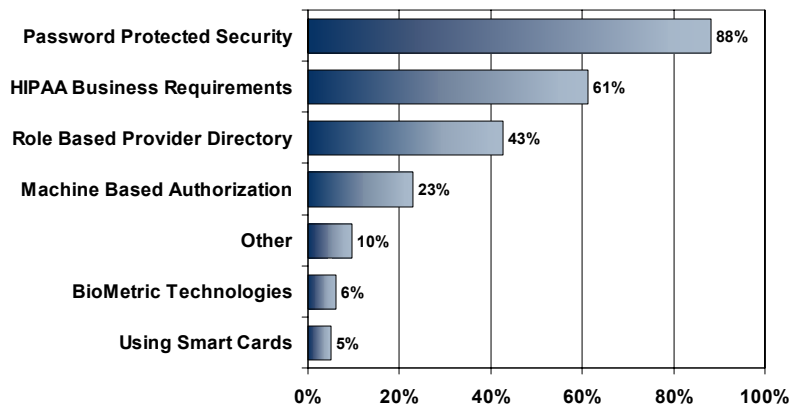
Methods for Obtaining Patient Past Medical History Information (by Organization Type)

Figure 11



Method for Securing Electronic Authorization to Patient Information

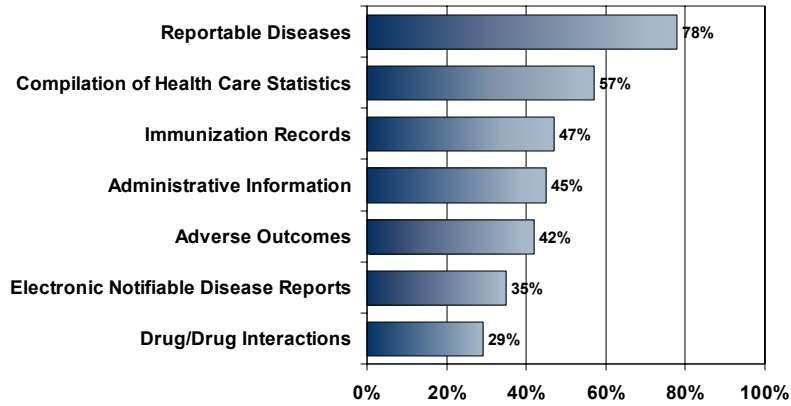
Figure 12



Based on 63% of respondents who work for organizations that have access to information electronically

Information Exchange with Public Health Agencies

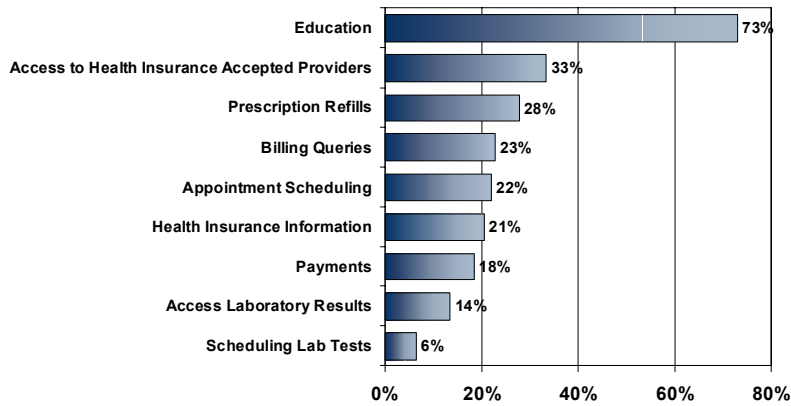
Figure 13



Based on 80% of respondents who work for organizations that exchange information with public health agencies

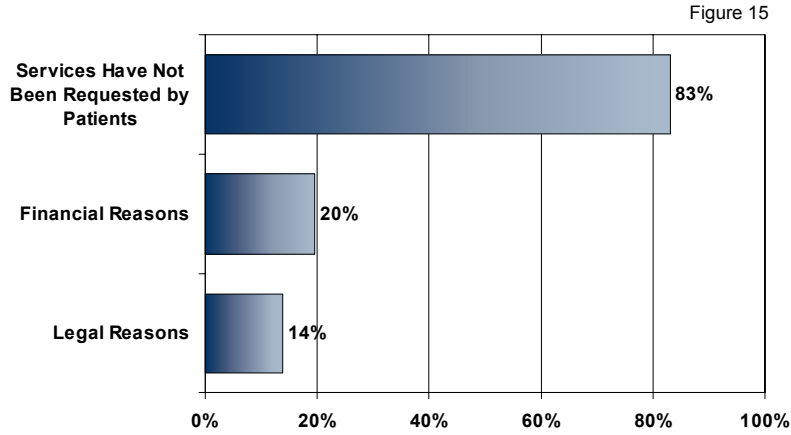
Online Patient/Consumer Services

Figure 14



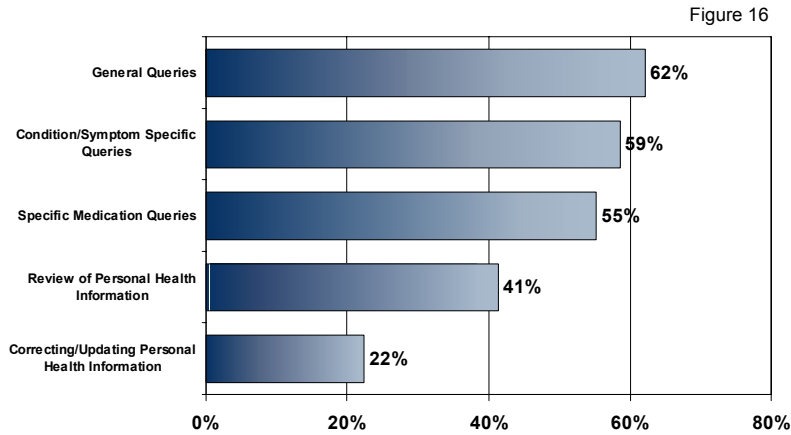
Based on 50% of respondents who work for organizations that offer online services to patients/consumers

Why Don't Healthcare Organizations Provide Patients with Online Services?



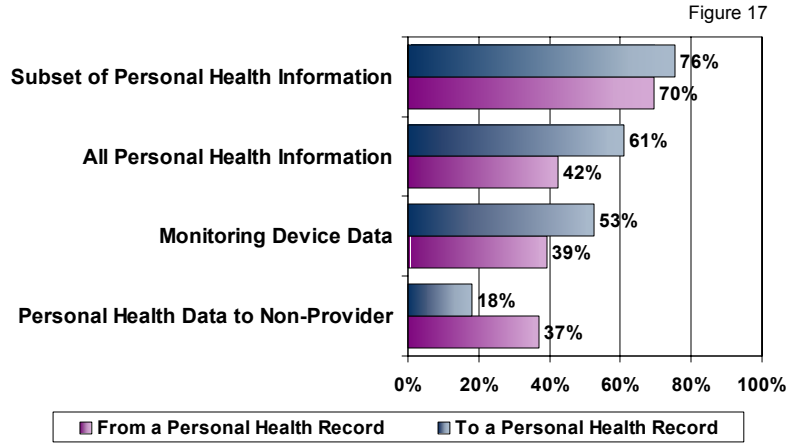
Based on 50% of respondents who work for organizations that do not offer online services to patients/consumers

Online Services Offered to Patients via Personal Portal

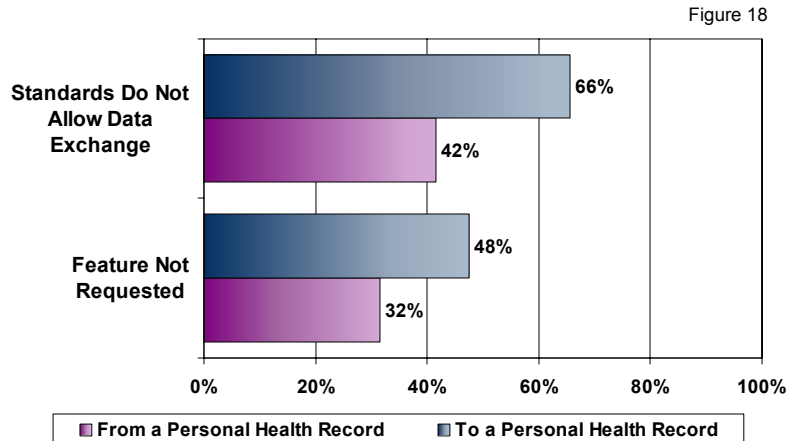


Based on 20% of respondents who work for organizations that do not offer online services to patients/consumers

Personal Health Record (PHR) and Data Transfer

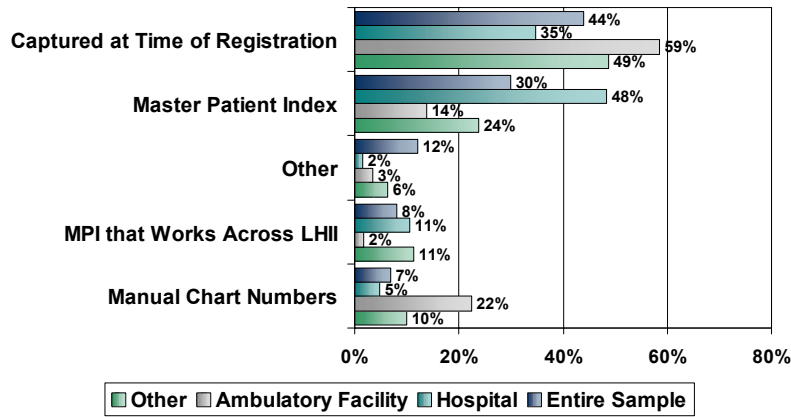


Why Don't Respondents Transfer Data to and from PHRs?



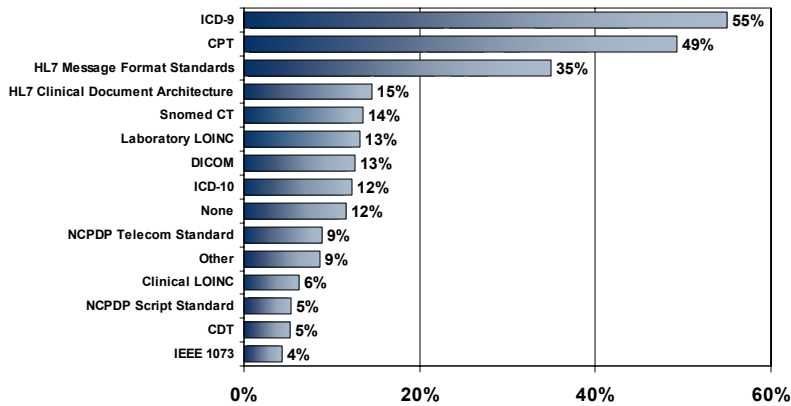
Patient Identification

Figure 19



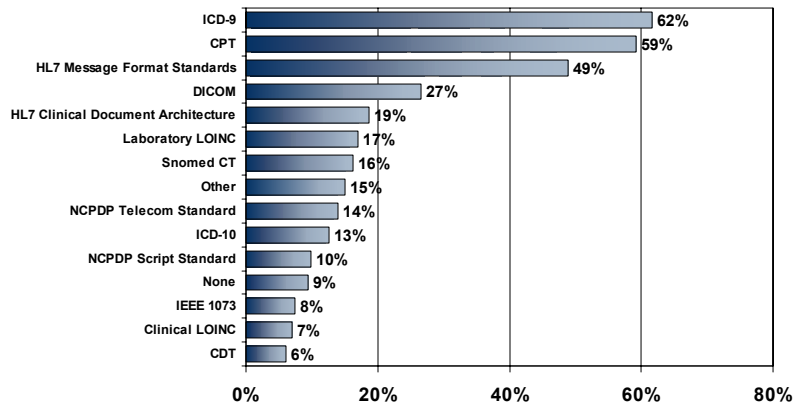
Standards Used for Communication with Public Health Agencies

Figure 20



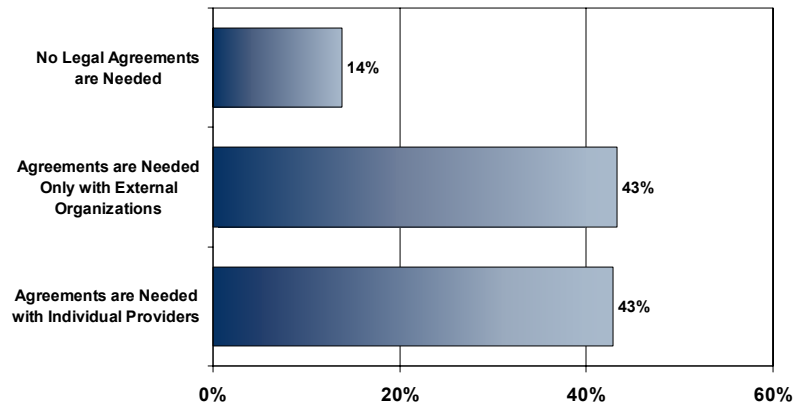
Standards Used for Communication with Other Outside Organizations

Figure 21



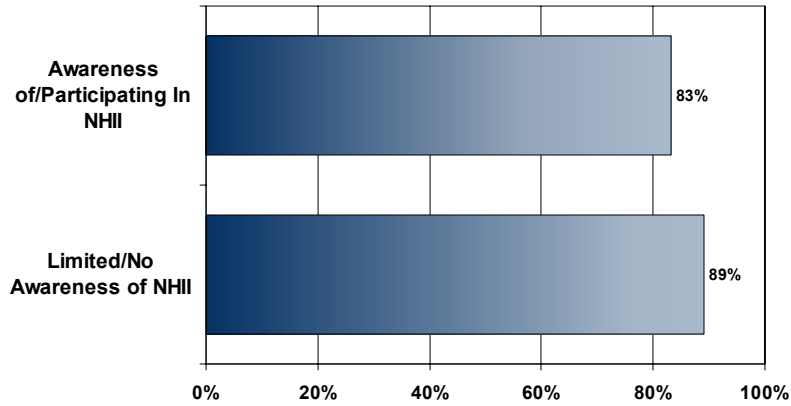
Legal Constructs Necessary to Share Patient Care Information

Figure 22



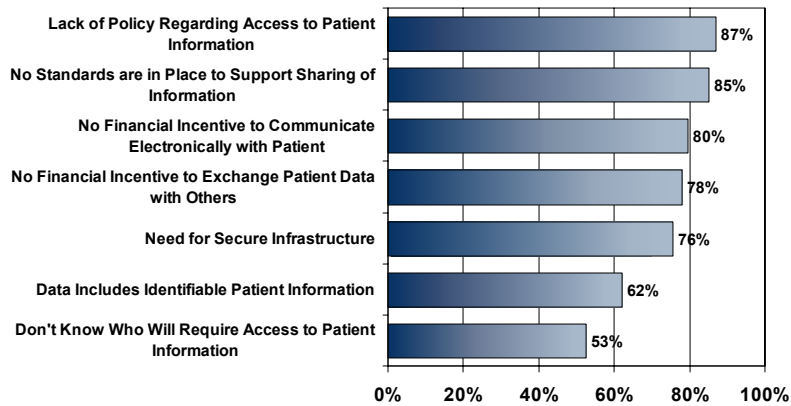
Legal Constructs Necessary to Share Patient Care Information (by Awareness of NHII)

Figure 23



Barriers to NHII Creation

Figure 24



Barriers to NHII Creation

Figure 25

