

A National Survey of Health Information Technology (HIT) Adoption in Federally Qualified Health Centers

Michael R. Lardiere, LCSW
Director HIT
Sr. Advisor Behavioral Health
National Association of Community Health Centers
Clinical Division
7200 Wisconsin Ave, Ste# 210
Bethesda, MD 20814
301-347-0400
www.nachc.com
May 2009
For Inquiries Contact: mlardiere@nachc.com



About NACHC

Established in 1971, the National Association of Community Health Centers (NACHC) serves as the national voice for America's Health Centers and as an advocate for health care access for the medically underserved and uninsured.

NACHC's Mission

To promote the provision of high quality, comprehensive and affordable health care that is coordinated, culturally and linguistically competent, and community directed for all medically underserved populations.

About Health Centers

Community Health Centers provide comprehensive primary and prevention services in medically underserved areas. Collectively they serve more than 18 million people at more than 7,000 sites located throughout all 50 states, the District of Columbia, Puerto Rico, and the U.S. territories.

The adoption and use of health information technology (HIT) continues to be a significant issue of concern to the nation. HIT is a tool that can assist medical providers in efforts to improve quality care, decrease medical errors, increase efficiency, reduce duplicative services, provide more timely patient/provider interactions and provide significant savings in the delivery of healthcare services. This is particularly important to Community Health Centers.

The National Association of Community Health Centers (NACHC) surveyed close to 1,000 FQHCs in 2008 in an effort to obtain a better understanding of adoption rates, trends in the use of HIT and identify common barriers to adoption of HIT among health centers.

SUMMARY of FINDINGS

Health centers have made significant strides towards EHR and other HIT implementation over the last two years. Of the 362 health centers that responded to the NACHC 2008 HIT Survey 49% identified that they were using an EHR and were either “all electronic” or were “part paper and part electronic”. We feel that this is an over sample of actual implementers and would not indicate the actual proportion of health centers that have implemented an EHR as yet. When compared to 2007 UDS data, however, the centers that responded to the survey closely match the percentages of rural and urban health centers in the 2007 UDS.

This data, however, can be used to understand many of the factors affecting implementation and other health center needs regarding meaningful use of EHRs and training needs.

Practice Management

Most health centers, over 95% are currently utilizing a practice management system and are submitting claims electronically. The responses from the survey indicate that although 95% of health centers have a practice management system over 25% of the health centers that have an EHR identified that their EHR and their practice management system are not integrated and do not share data between the systems. Health centers have not had the operational dollars to use for this activity. It would be important for any funds available through HRSA under the American Recovery and Reinvestment Act and Medicaid Incentive funds through the states be allowed to be utilized to fund the programming for this basic interoperability. It would also be important for Medicaid Incentive funds to allow for purchases of combined EHR and Practice Management Systems in order to ensure this interoperability in the future.

HCCN Participation

Belonging to a Health Center Controlled Network (HCCN) seems to have a positive effect on implementation i.e. a higher percentage of health centers that were part of a HCCN identified that they were “all electronic” vs. “part paper and part electronic” and were more likely to be planning an implementation within the next twelve months. Over 22% of the health centers that responded to the survey were part of a HCCN. Over 57% of these health centers were using an EHR. Another 25% of these health centers had plans to implement an EHR within the next twelve months and 85% of these had already selected a vendor.

EHR Vendors

Although there are many EHR vendors that were identified by individual health centers as their EHR there is only a limited set of EHRs that most health centers use. Health centers are not an easy market for EHR vendors to service given the many special federal and state reporting requirements, multi specialty practice, and disease and population management needs of health centers. There are eight vendors that occupy most of the health center market at this time.

Fully Functional EHRs

Most health centers that responded to the survey would not meet the criteria for a fully functional EHR. This is a significant finding given that in order to obtain Medicaid Incentive payments for EHR adoption and use health centers will need to implement more of the functionality available in their EHRs. Once the definition of “meaningful use” is finalized health centers will need to retrain staff and upgrade their systems in order to obtain these incentives.

Rural vs. Urban Implementation

Health centers in rural areas were more likely to describe their use of an EHR as being “all electronic”. When we looked more deeply at this we found a differentiation in being “all electronic” vs. “part paper and part electronic” was correlated to the number of providers at the health center. Health centers in rural areas tended to have fewer providers. Further study would be required to determine why rural health centers are more likely to use an all electronic health record in their practice and urban health centers are more likely to be utilizing part paper and part electronic systems at this time. One might postulate that urban health centers generally are larger, have more staff and the process to implement an EHR and convert their processes to all electronic is a much larger and more difficult task. This is discussed later under the FTE Comparison section of this report.

Behavioral Health and Oral Health Integration

Over 67% of the health center that responded identified that they provide behavioral health services and over 73% of health centers that responded identified that they provided oral health services. The majority of respondents identified that neither behavioral health nor oral health services are integrated with their medical systems. Only 2.9% of the health centers that responded identified that their oral health system was integrated with their medical system. With such an overwhelming prevalence of only a few EHR systems in the health center marketplace and the domination of the oral health marketplace by one player one needs to consider why only a handful of health centers have integrated oral health and EHR systems.

Sharing Data with Other Providers

Only 20% of health centers that responded identified that they share data with other providers. Of those that do share data with others they most frequently share data with labs, and hospitals. It should also be noted that over 30% of health centers that do share data already share data with a Health Information Exchange (HIE) or Regional Health Information Organization (RHIO). The types of data that they share include laboratory results, patient demographics, disease management data, medication data, and pathology results.

Implementation Plans

Over 50% of the health centers that responded that did not have an EHR installed identified that they would be implementing an EHR system in the next twelve months.

Sources of Funding

Sources of funding for EHR implementation at health centers include their operational budget, federal and state grants, foundation grants and grants from HCCNs. Over 50% of health centers reported that they required funding from more than one source in order to implement their system. Over 17% identified that they needed three funding sources and 9% needed four funding sources. Consideration must be given to the strain on the limited resources of health centers to obtain these funds. Proposal writing requires

significant effort and diverts resources of highly skilled health center personnel from other more patient centered activities.

Use of Disease Registries

Health centers currently use disease registries and expect to continue to do so even with the withdrawal of support from HRSA in funding the disease registry. This speaks to the history and success of health centers in disease management and population management initiatives. A few of the health centers identified that the disease registry function was part of their EHR. More in depth review showed that the vendors that provided this functionality were two of the most utilized vendors by health centers. Why these large vendors with dominance in the health center market would only make this functionality available to a very small handful of health centers requires more in depth review. One would question the level of fragmentation in the implementation of these EHRs in health centers or other factors that would limit the implementation of the disease registry function at all health centers utilizing these same vendors.

Barriers to Implementation

Barriers to implementation include lack of capital to invest in EHRs and lack of funds for ongoing EHR operations followed by inability to integrate with the practice management system, concern about loss of productivity during implementation, lack of support from physicians and lack of project management staff.

Dedicated IT Staff

A large number of health centers do not have dedicated IT staff. Only 63% of the health centers that responded identified that they had dedicated IT staff. Over 70% of health centers utilized additional information systems or computer support staff. The IT workforce shortage is an issue that will need to be addressed and studied further to assess its impact on EHR adoption in health centers.

Donated Support

Very few of the responding health centers identified that they receive any donated hardware, software or support services from other entities in the last twelve months. 78.3% identified that they had not. One would need to question why health centers have not been more active in attempting to obtain these services especially in light of relaxed Stark laws which would make these donations allowable. It would seem that many health center patients would be treated in local community hospitals that would have an interest in sharing data in order to provide higher quality care to the residents of their communities.

Board Involvement

Board involvement and incorporation of HIT acquisition as part of a health center's business and quality plan play important roles in the success of any implementation. Over 85% of the health centers that had an EHR in place identified that their Board was involved and over 77% identified that this was part of their business/quality improvement plan.

Priorities to Build HIT Capacity

According to the health centers that responded their highest priorities in terms of needs to build HIT capacity were financial support for initial and ongoing EHR costs, followed by workflow redesign to best utilize health information technology, learning how to use health information to improve clinical care and improving network connectivity across health center sites. These themes were mirrored in their responses to the question about single most important thing that NACHC could do for health centers which after providing financial support were identified as providing assistance in using HIT to improve clinical care, providing assistance with workflow to best use HIT and improving network connectivity.

Use of a Web Site

Almost 80% of the health centers that responded identified that they had a web site, however, these web sites do not currently provide an interactive experience for the patient/consumer and do not allow patients the ability to make appointments via the web site, email providers, allow providers to respond to patients via email, or place lab results, medication lists, after patient visit summaries or notes of what discussed in the session on the web site.

Use of Telemedicine/Telehealth

Many health centers are currently utilizing telemedicine. Over 50% of the health centers that responded identified that they were recipients of telemedicine services. Behavioral health, dermatology and chronic disease counseling were the most often identified services. Over 26% of health centers identified that they provided telehealth services. Behavioral health, chronic disease counseling and dermatology were identified as the most frequently provided services. Telehealth services were also utilized for non clinical administrative and educational purposes.

The Future

Health centers will continue to need ongoing assistance if they are to keep pace with the national requirements for HIT adoption and meaningful use of HIT. This assistance extends beyond financial and includes technical assistance regarding connectivity and web design, project management expertise to implement successfully, expertise in workflow redesign and in the use of medical informatics to improve quality care. The Health Center Controlled Network model seems to continue to provide advantages to health centers in addressing these issues. Health centers that participate in this model seem to be better prepared to move forward with EHR adoption than health centers that do not participate in the HCCN model.

Further analysis of this data was limited due to the limitations of funding for the project, however, continued analysis is warranted. More in depth analysis would be helpful in determining specifically the relation of HIT adoption in health centers as it directly relates to the populations that health centers serve. NACHC will continue to seek additional funding sources to carry on the additional analysis that is required.

About This Survey

The purpose of the survey was to determine the extent to which health centers have adopted health information technology, identify the major vendors utilized by health centers, determine the extent to which health centers have integrated behavioral health and/or oral health electronic records with medical health records, and health centers' use of telemedicine. We also sought to determine the extent to which health centers are sharing data with other service providers, their HIT staffing capacity, the level of health center board involvement, strategic planning regarding barriers to HIT adoption and health centers' ability to interact electronically with their patients.

NACHC conducted a literature search to determine the most current definitions of an electronic health record currently in use. Current definitions in use by the Department of Health and Human Services Office of the National Coordinator for Health Information Technology and the Alliance for Health Information Technology as available on January 16, 2008 were utilized. NACHC also collaborated with HRSA's Office of Health Information Technology, HRSA's Office for the Advancement of Telemedicine, AHRQ, the National Council of Community Behavioral Health Centers, and the National Network for Oral Health Access to ensure

a comprehensive review of the survey tool. Primary Care Associations and Health Center Controlled Networks were solicited to assist with encouraging health centers to respond to the survey instrument.

Data Collection and Limitations

There are a number of important caveats to this survey which may explain the survey results. NACHC maintains a database of FQHCs which was utilized to identify health centers for this survey. The survey was distributed to 989 health centers via an online and a paper based tool. Without data on all health centers, it is not possible to determine whether the responding centers are representative of all health centers. While a significant percentage of surveyed health centers responded (36.6%, N=362), not all responding centers answered every survey question. All data are self reported and it is likely that some of the responses may be estimates rather than exact numbers. The language regarding health information technology and its definitions are changing rapidly and responders may have interpreted survey questions differently. Health centers were free to determine which method of completion was most appropriate for them. Surveys that were completed by hand were faxed in to NACHC and hand entered into the database by NACHC staff.

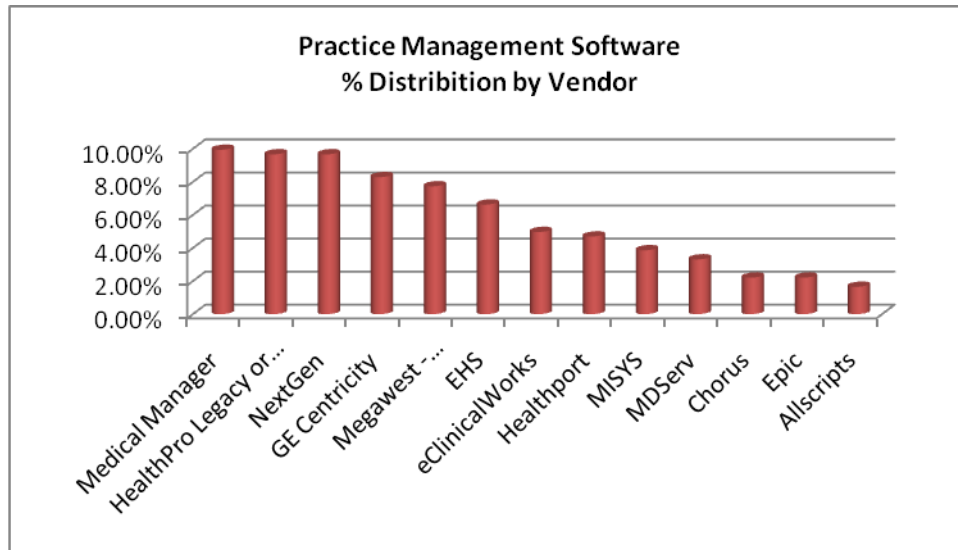
The survey was open for response from July 2008 through December 2008.

FINDINGS

Submission of Claims Electronically

Surprisingly not all health centers are submitting claims electronically. Only 95.6% (N=346) identified that they submit claims electronically and 4.4% (N=16) identified that they did not. Two health centers identified that they did not know if they submitted claims electronically. In an era where most state Medicaid agencies require electronic claims submission the question of health center survival utilizing a manual process is enormous. Five (5) of the health centers not using an electronic system identified themselves as being in a rural area, seven (7) of them identified themselves as being in an urban area and two (2) identified themselves as being both. Twelve (12) of these health centers identified themselves as receiving a grant under Section 330 (e) as a Community Health Center while four of them identified that they received their funds from Section 330 (g) Migrant Health Center (2) or Section 330 (h) Healthcare for the Homeless programs (2).

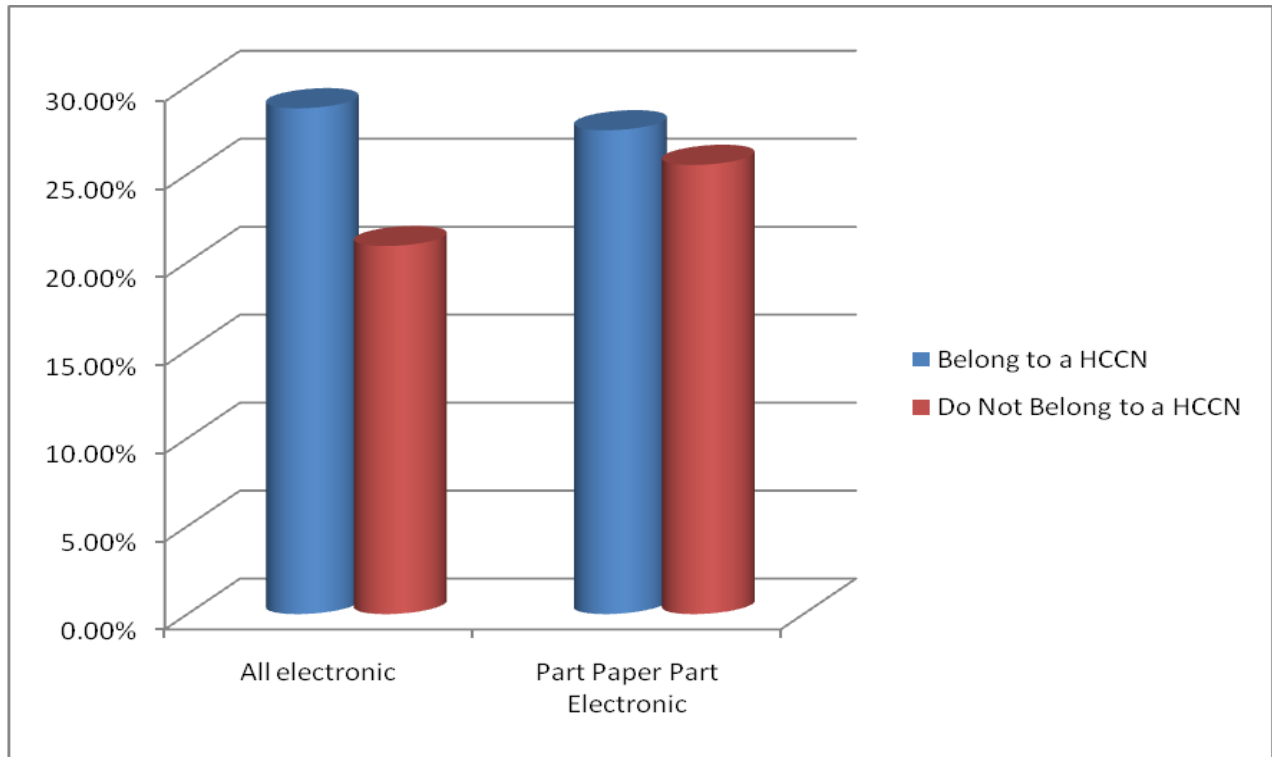
The major vendors that currently occupy the health center practice management market are identified in the graph below.



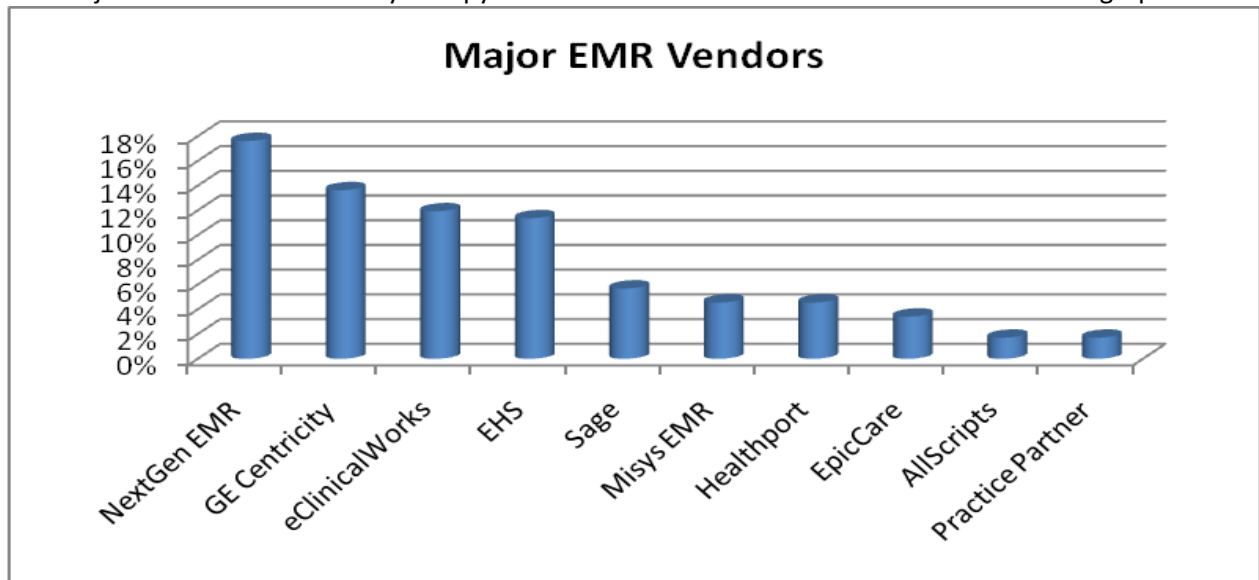
EHR Adoption

The survey queried health centers use of an EHR. We asked health centers to self identify if they were All Electronic, Partially Electronic and Part Paper or Not Using an EHR. Of the centers that responded to the survey 22.65% (N=82) identified that they utilized an EHR and that they were “all electronic”. Another 25.97% (N=94) identified that they utilized an EHR, however, they were still “part paper and part electronic” and 51.38% (N=186) of the respondents identified that they did not utilize an EHR.

We reviewed EHR adoption with respect to belonging to a health center controlled network (HCCN) and found that of the 176 health centers that responded that they either used an all electronic EHR or were using an EHR but were part paper and part electronic 25% (N=44) indicated that they were part of a HCCN. If we look more closely at those identifying that they were all electronic we find that 28.05% (N=23) were part of an HCCN. Health centers that are part of an HCCN seem to have higher rates of EHR implementation and when they do implement the EHR they are more likely to be all electronic vs. part paper and part electronic.



The major vendors that currently occupy the health center EHR market are identified in the graph below:



Use of a Fully Functional EHR

When determining EHR adoption rates there continues to be a need to distinguish between providers who have adopted and are utilizing a “fully functional” EHR vs. those that are not due to the system not providing the functionality or the provider may have some of the features turned off. In the evolution of the implementation process it is often necessary to limit the functionality of the EHR in order for staff to adjust to new systems and implement modules of the system over time.

The NACHC survey utilized current descriptions of a fully functional EHR utilizing descriptions from the HHS Assistant Secretary for Program Evaluation (ASPE) as identified in their report of 2006¹, the report in the New England Journal of Medicine which was supported by the Office of the National Coordinator and a grant from the Robert Wood Johnson Foundation² and for e-Prescribing the current descriptions from CMS that were available as of the fielding of the survey. The description of a fully functional EHR for the purposes of this survey, therefore include the ability to:

- **Data Collection**
 - collect patient demographic data
- **ePrescribing**
 - generate computerized orders for prescriptions
 - generate complete active medication lists
 - select medications electronically
 - electronically transmit prescriptions
 - provide automated prompts to the provider on the drug being prescribed
 - provide automated prompts that offer the provider information on potentially inappropriate dose of route of administration of a drug
 - provide the provider automated prompts on drug-drug interactions, allergy concerns, or warnings and cautions
 - provide information related to the availability of lower cost, therapeutically appropriate alternatives (if any)
 - provide information on formulary or tiered formulary medications
 - provide information on patient eligibility, and authorization requirements received electronically from the patient's drug plan
- **Computerized Physician Order Entry**
 - provide computerized orders for tests
 - send orders electronically
 - receive lab results electronically
 - highlight out of range results
 - transmit imaging results
 - receive imaging results
- **Clinical Notes**
 - allow for clinical notes
 - allow for medical history and follow-up notes x
- **Clinical Decision Support**
 - include reminders for guideline-based interventions and/or screening tests
 - provide clinical decision support for at least one diagnosis
- **Public Health Reporting**
 - provide public health reporting
 - send notifiable diseases electronically

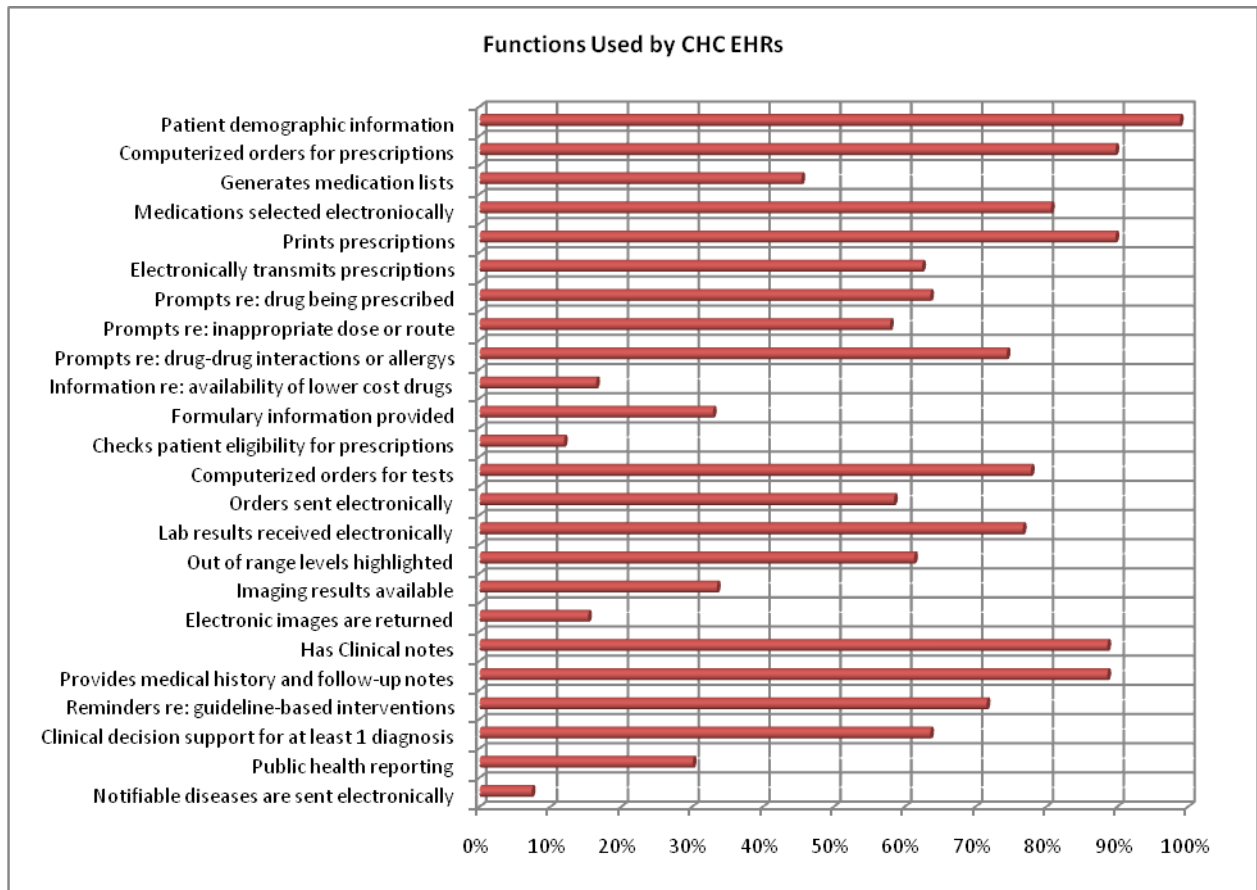
Of the 82 health centers reporting that they were all electronic in their use of an EHR 7.32 % (N=6) identified that they utilized all of the e-Prescribing functions included in a fully functional EHR. When we expanded this to include health centers that identified that they were part electronic and part paper only one additional center met the criteria for a fully functional e-Prescribing system.

When reviewing the 176 health centers that were all electronic or part paper and part electronic no health centers met the criteria on all 23 indicators. When deleting the requirement for notifiable diseases being

sent electronically 1.14% (N=2) health centers were identified as meeting the criteria for a fully functional EHR.

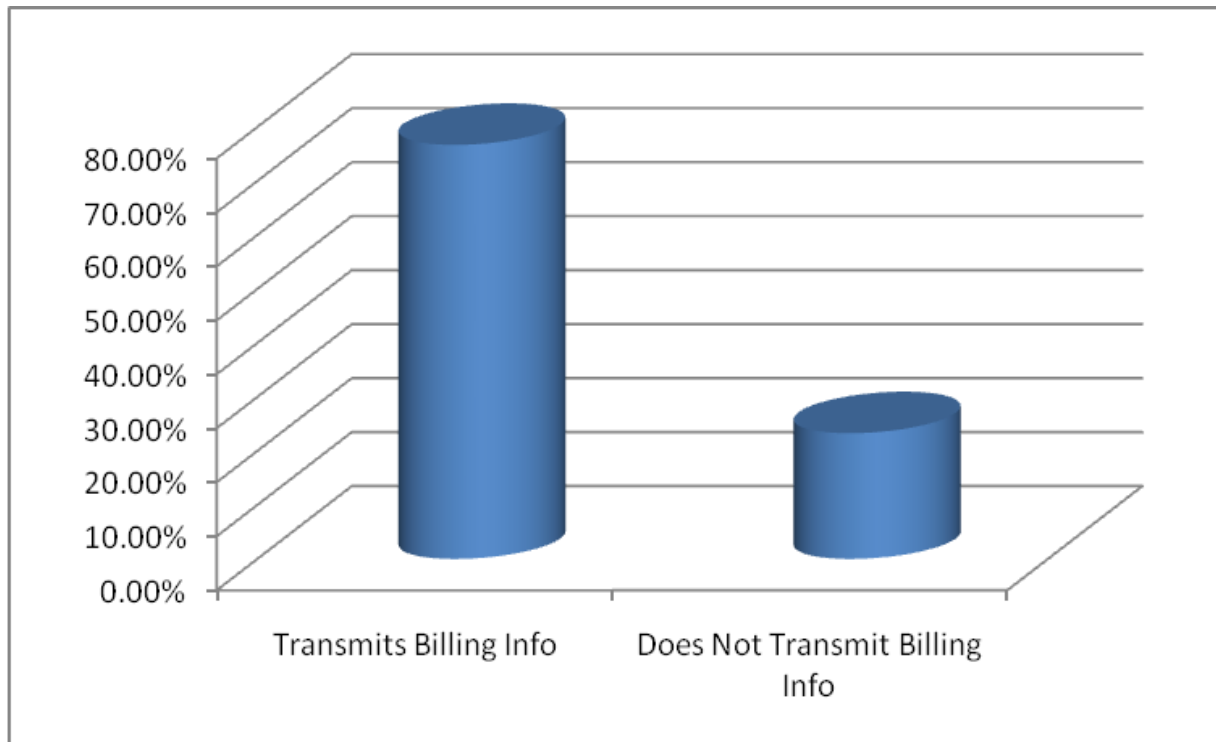
The table and the graph below identify the most frequent functionalities that are currently being utilized in EHRs by health centers.

Function	CHC EHRs Functionality	%
Patient demographic information	174	98.86%
Computerized orders for prescriptions	158	89.77%
Generates medication lists	80	45.45%
Medications selected electronically	142	80.68%
Prints prescriptions	158	89.77%
Electronically transmits prescriptions	110	62.50%
Prompts re: drug being prescribed	112	63.64%
Prompts re: inappropriate dose or route	102	57.95%
Prompts re: drug-drug interactions or allergies	131	74.43%
Information re: availability of lower cost drugs	29	16.48%
Formulary information provided	58	32.95%
Patient eligibility	21	11.93%
Computerized orders for tests	137	77.84%
Orders sent electronically	103	58.52%
Lab results received electronically	135	76.70%
Out of range levels highlighted	108	61.36%
Imaging results available	59	33.52%
Electronic images are returned	27	15.34%
Has Clinical notes	156	88.64%
Provides medical history and follow-up notes	156	88.64%
Reminders re: guideline-based interventions	126	71.59%
Clinical decision support for at least 1 diagnosis	112	63.64%
Public health reporting	53	30.11%
Notifiable diseases are sent electronically	13	7.39%



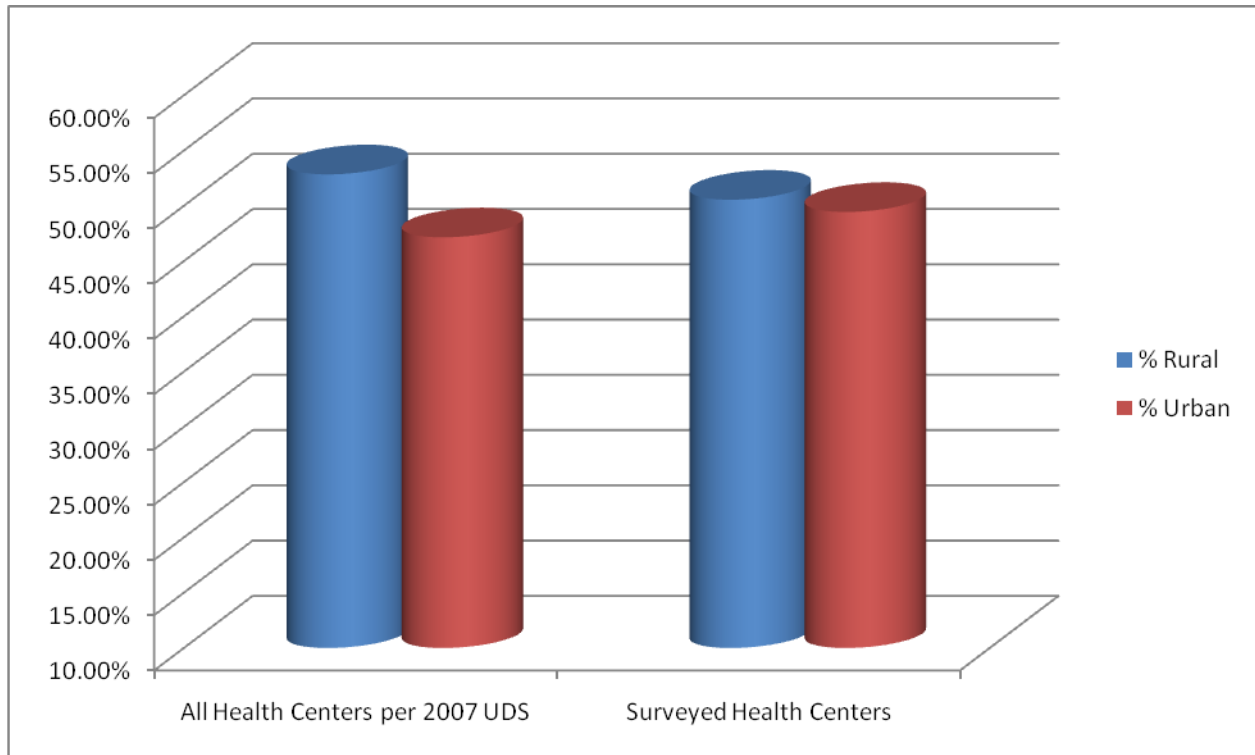
EHR Practice Management Interface

Of the 176 health centers that responded as having an EHR only 76% (N=135) identified that their EHR could transmit billing information directly into their practice management system while 23.3% (N=41) identified that their EHR could not transmit billing information into their practice management system. This is a significant finding. This level of non interoperability within a health center leads to increased paper processes and human interaction with increased opportunities for errors that exemplifies some of the basic inefficiencies of our healthcare system today. In discussions with health centers the reason for this is that EHRs may have been purchased after they had purchased their practice management system and the two systems may be from different vendors. Programming the interface between the systems can range from \$20,000 - \$40,000.



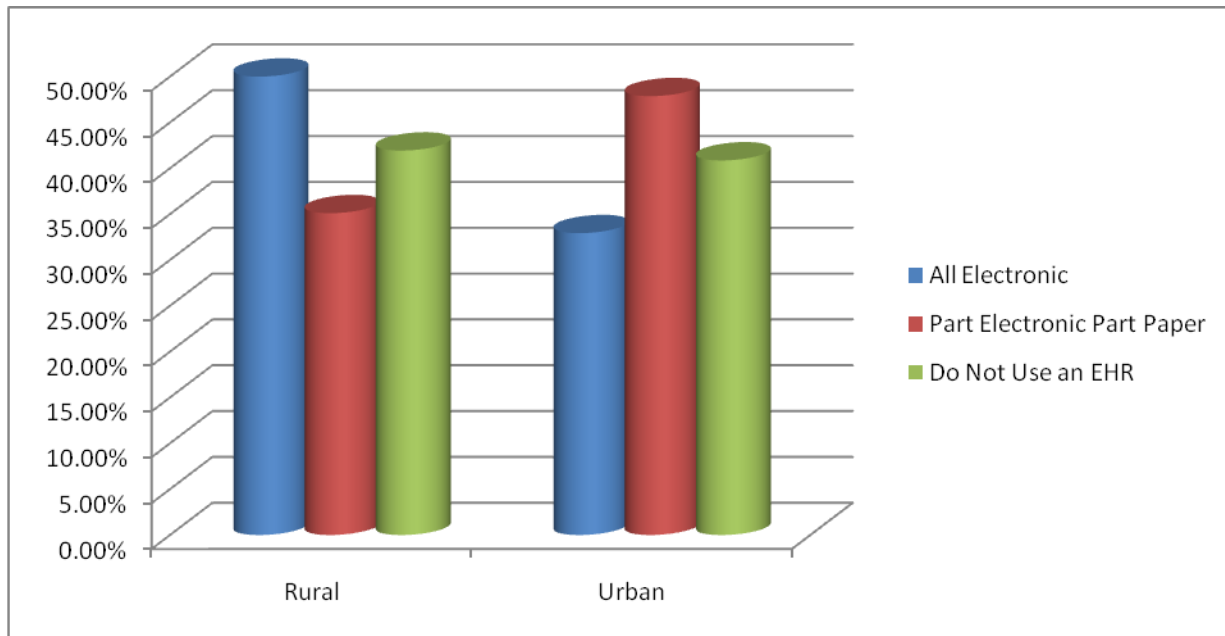
Rural vs. Urban

NACHC received a 36.6% response rate from health centers (N=362) responses. Responses were received from every state except Nebraska and the District of Columbia. The distribution of health centers that identified themselves as being located in a Rural vs. an Urban area was consistent with the distribution of all health centers when reviewed against 2007 Uniform Data Service (UDS) Reports. The total of all health centers according to 2007 UDS Reports is 1071. Health centers located in rural areas comprise 53.2% (N=566) while those located in urban areas comprise 47.4% (N=505) of all health centers. In our sample 41.99% (N=152) were self reported to be located in a rural area and 40.88% (N=148) were reported to be located in an urban area. There were 17.13% (N=62) that self reported to be in both a rural and an urban area. This is due to many health centers having more than one location. For this comparison we assigned half of the “Both” group to our original Rural and Urban tallies which brought the Rural and Urban counts to 50.55% (N=183) and 49.44% (N=179) respectively.



When reviewing the adoption of EHRs of the eighty-two (82) health centers identifying that they use an all electronic EHR 50% (N=41) were self identified as being in a rural area, 32.93% (N=27) identified that they were in an urban area and 17.07% (N=14) identified that they were in both a rural and urban area. Those centers that indicated that they utilized an EHR but were part paper and part electronic had a rural vs. urban distribution of 35.11% (N=33) being in rural areas, 47.87% (N=45) being in urban areas and 17.02% (N=16) identified as being in both. Of the 186 health centers that responded that they were not using any EHR 41.94% (N=78) identified that they were in a rural area, 40.86% (N=76) identified they were in an urban area and 17.20% (N=32) identified that they were in both.

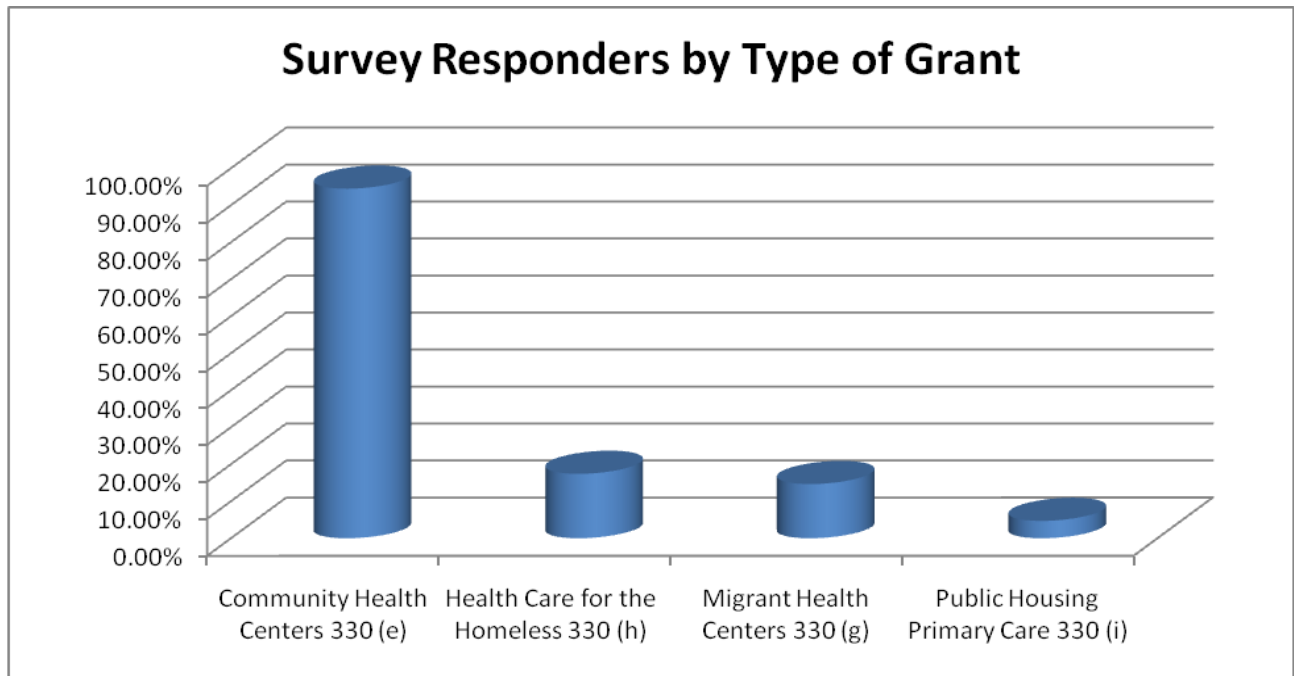
Of the health centers that did respond to the survey there was not much of a difference in rural vs. urban for those health centers not using an EHR, however, there was a significant difference when reviewing health centers that identified themselves as being all electronic with 50% (N=41) being rural and 32.93% (N=27) being in urban areas. Of the health centers identifying themselves in both a rural and an urban area 17.07% (N=14) identified that they were all electronic. When those that were part electronic and part paper were combined there was still a prevalence of adoption among health centers in rural areas 85.11% (N=74) vs urban areas at 80.80% (N=72) while those identified as being in both a rural and an urban area showed adoption at 34.09% (N=30).



When compared to the total number of health centers surveyed, however, utilization of an all electronic EHR at health centers is more prevalent at rural health centers 4.15% vs. urban health centers 2.73%. When reviewing the adoption of any EHR all electronic or part paper and part electronic adoption rates are consistent with only 7.48% of health centers in rural areas and 7.28% of health centers in urban areas having any form of EHR. Those in the both category showed adoption at 3.03%.

Type of Funding under the PHS Act

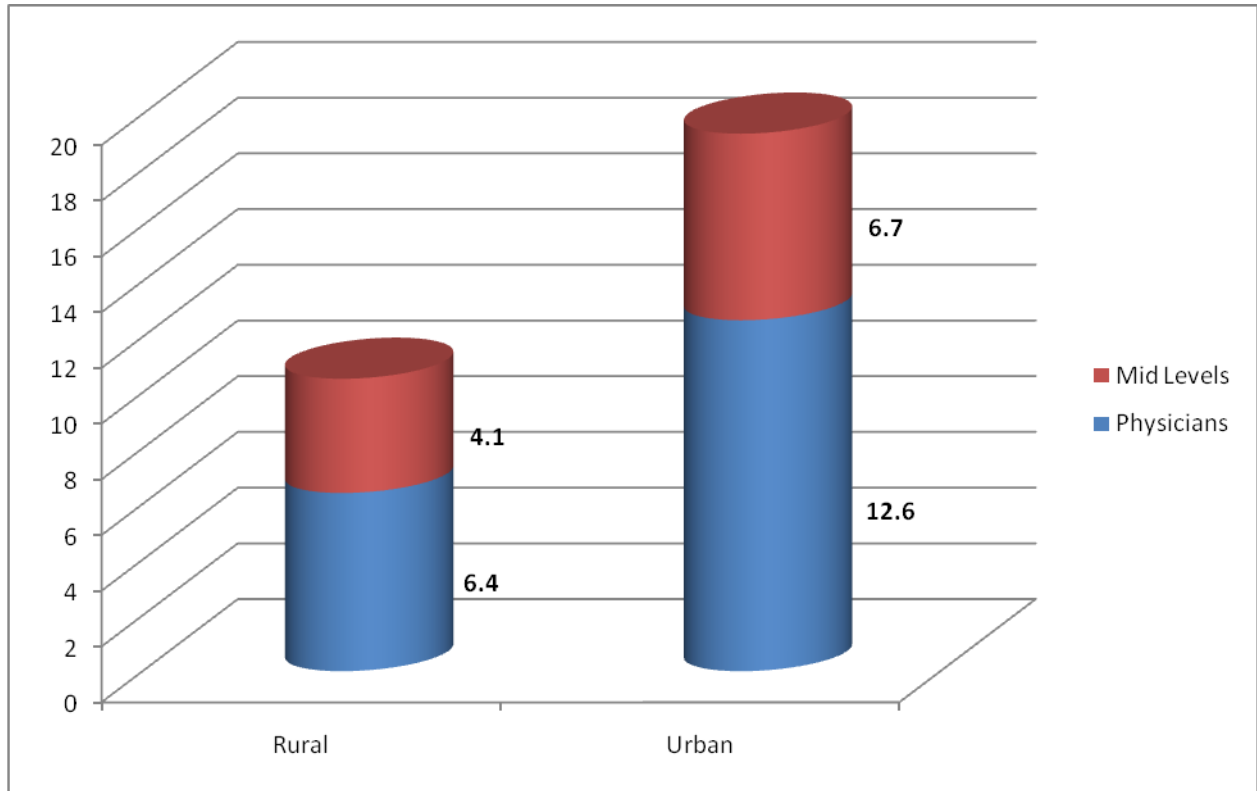
Health centers receive grant funds under various sections of the PHS 330 Act. Community Health Centers 330 (e), Migrant Health Centers 330 (g), Health Care for the Homeless 330 (h) and Public Housing Primary Care 330 (i). We also sent surveys to FQHC Look-a-likes which function as health centers in many respects, however, they do not receive all of the benefits that health centers receive. Of the health centers that responded to the survey 94.48% (N=342) responded that they received a grant under Section 330 (e) Community Health Center section of the PHS Act while 17.4% (N=63) received funds under a Healthcare for the Homeless Grant, 14.64% (N=53) received funds under a Migrant Health Center Grant, 4.7% (N=17) received funds under a Public Housing in Primary Care Grant and 2.21% (N=8) were FQHC Look-a-Likes respectively. A number of health centers that responded 28.7% (N=104) reported that they received grants under more than one of these programs. This is an important finding as it identifies that health centers are not only serving underserved populations but they are also serving the most vulnerable populations.



FTE's

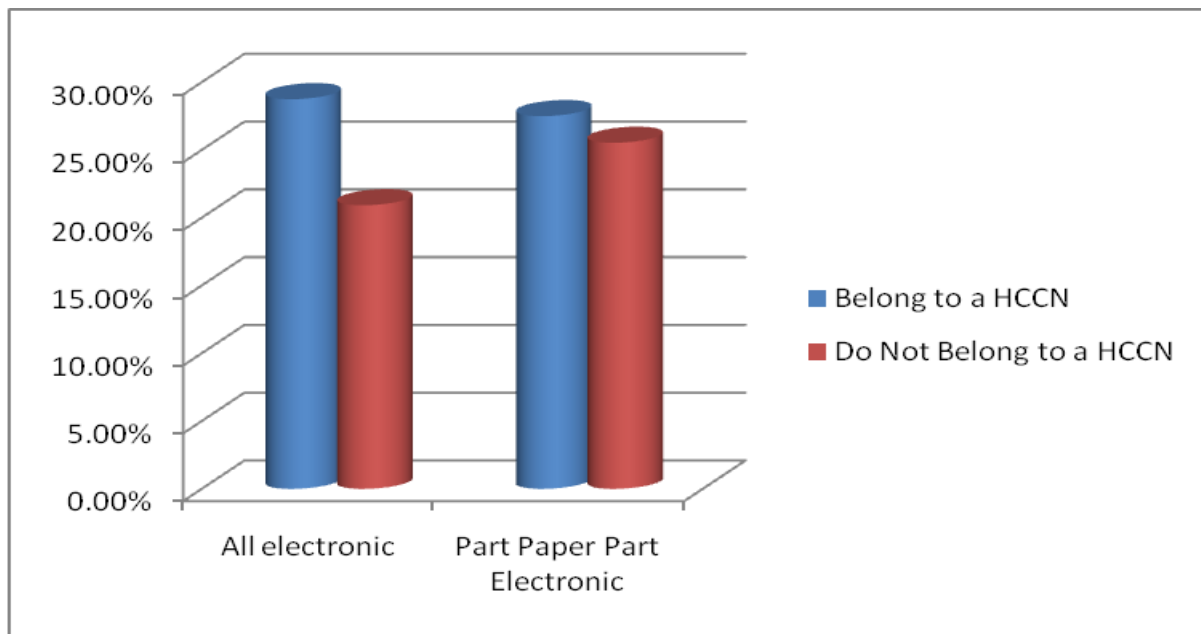
Survey questions regarding numbers of Physician's, Mid-Level Practitioners and their Full Time Equivalents (FTEs) were included. Of the surveys received the average number of physician FTEs was 10.2 while the average number of mid level FTEs was 5.7. This was felt to be of importance as it has implications with pricing when paying for EHR software licensing and also has implications for EHR adoption. It has been often reported that EHR adoption is more difficult in small physician practices. When drilled down further health centers identifying themselves as being in a rural area had an average of 6.4 physician FTEs and an average of 4.1 Mid Levels while health centers identifying themselves as being in an urban area had an average of 12.6 Physician FTEs and 6.7 Mid Level FTEs respectively.

There was a difference between the full adoption of EHRs when a comparison was made between those centers that identified they were all electronic vs. part paper and part electronic with those being part paper and part electronic having an average of 20.4 FTEs and those being all electronic have an average of 14.5 FTEs. It would seem that larger centers have a more difficult time or just take longer to fully implement and take advantage of an all electronic EHR.



Participation with a Health Center Controlled Network (HCCN)

Health center controlled Networks (HCCNs) are groups of three or more health centers that are 51% controlled by health centers that come together to share resources including clinical, administrative, health information technology and other services. When comparing EHR adoption rates it would seem that belonging to an HCCN has a positive effect on EHR adoption. Of the 362 health centers that responded to the survey 22.1% (N=80) identified that they belonged to a HCCN. Of the 80 that belonged to an HCCN 56.25% (N=45) identified that they were either all electronic or part paper and part electronic compared with 46.45% (N=131) that were not part of a HCCN. Only 18.75% (N=15) of those centers that are part of an HCCN identified that they were not using an EHR while 53.55% (N=151) of centers that responded and were not part of a HCCN identified that they were not using an EHR.



Use of e-Prescribing as a Standalone System

Of the health centers that identified that they were not using an EHR 15.5% (N=28) identified that they were using e-Prescribing via a standalone system. We then looked at their plans to implement an EHR and found that of these health centers 35.71% (N=10) had plans to implement an EHR within the next twelve months. It is important to note that these health centers are utilizing e-Prescribing as a standalone system without the benefits of any financial incentives like those that have recently gone into effect under CMS' e-Prescribing Incentive Program. Health centers are excluded from participating in these incentives due to regulation.

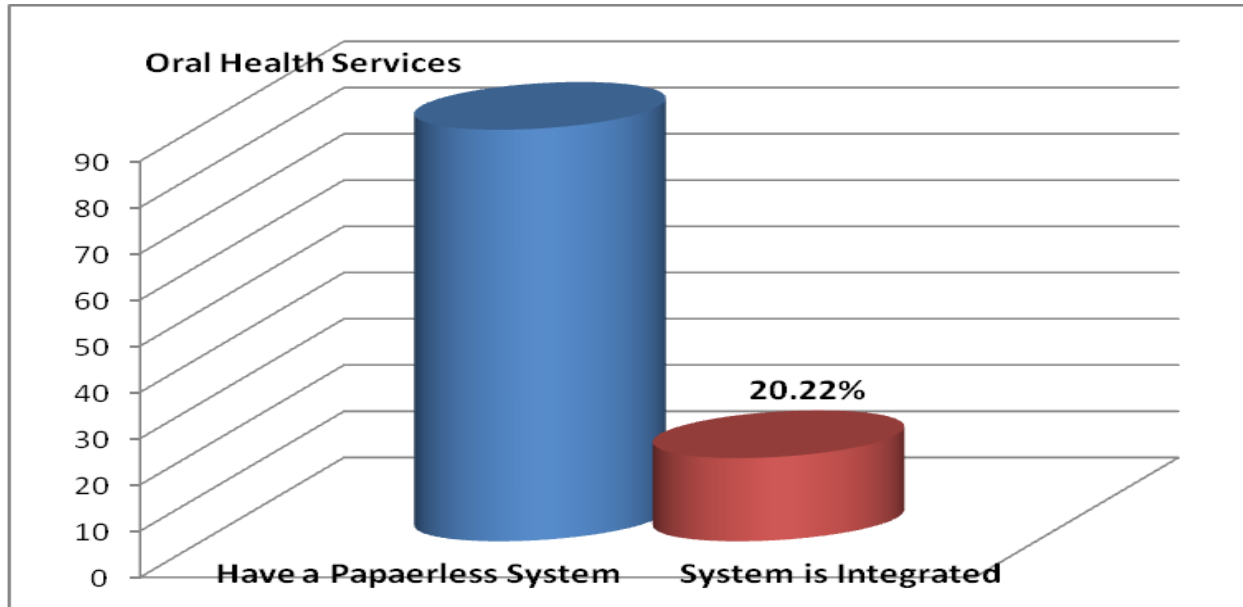
Integrated Behavioral Health Services

Of the total 362 health centers that responded to the survey 67.96% (N=246) identified that they were providing behavioral health services, however, only 28.46% (N=70) identified that they used a paperless system. Of those that used a paperless system 71.43% (N=50) identified that the behavioral health system was integrated with their medical system. Of the 176 health centers that identified that they were using an EHR only 39.77% (N=70) indicated that they were using the same system for behavioral health as they were for medical services. These were the same 70 health centers. If a health center was not using an EHR for medical services they were not using a separate EHR for behavioral health.

Integrated Oral Health Services

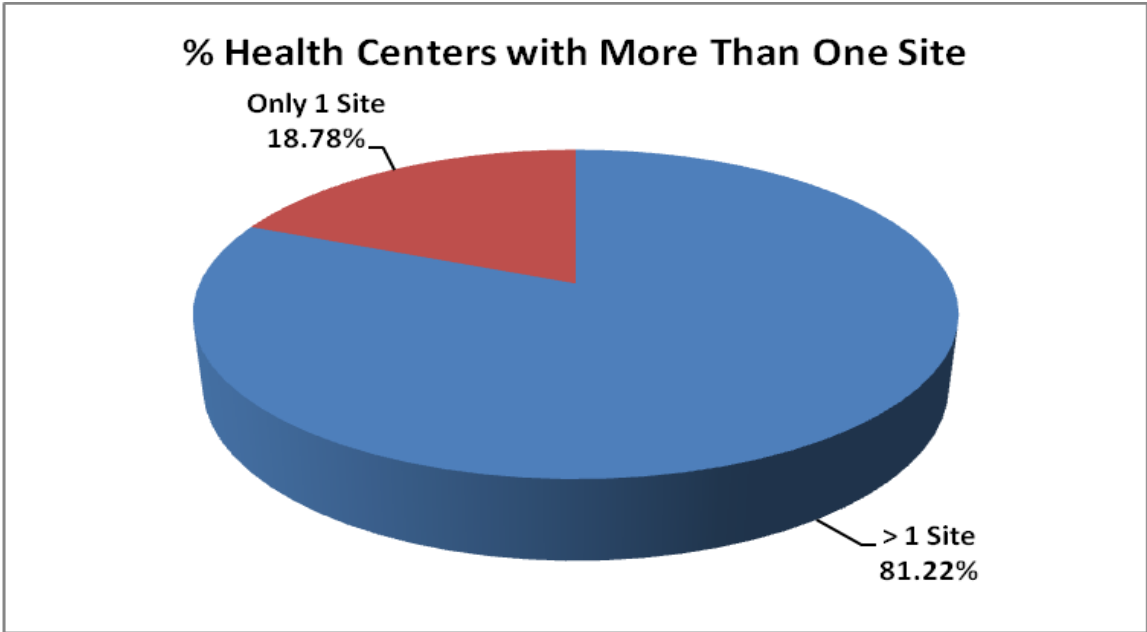
Of the total 362 health centers that responded to the survey 73.76% (N=267) identified that they provided oral health services. Of these 33.33% (N=89) identified that they used a paperless system. One vendor accounted for 73.03% (N=65) of the systems that health centers use. The next closest vendor was at 8.9% utilization. Of these 89 only 20% (N=18) identified that these records were integrated. Only 2.9% (N=8) health centers have found a way to provide an integrated solution with the major vendor in the

marketplace. Health Centers do, however, identify that in the majority of cases where the health center has a paperless Oral Health System the oral health providers can access medical information from the medical EHR. This was reported in 92.13% (N=82) of the health centers that have a paperless oral health system. Of the 176 health centers utilizing an EHR 52.84% (N=93) reported that medical and oral health providers utilize the same prescription module or system.



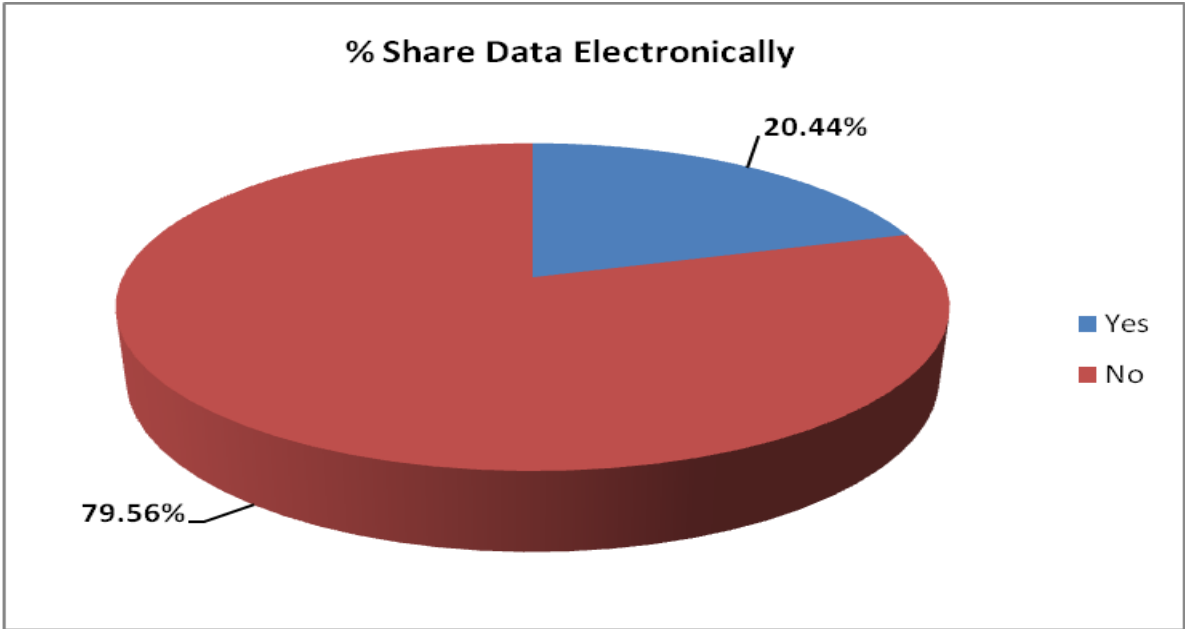
Number of Sites and EHR Implementation Equal to the Main Site

Of the health centers that responded 81.22% (N=294) identified that they had more than one site with 5.8 sites being the average. We also asked about the number of sites that had EHR implementation equal to the main site. Of the 176 health centers that indicated that they used an EHR, 131 responded to the question regarding the number of sites with EHR implementation equal to the main site. Of those that answered 58.78% (N=77) indicated that 100% of their sites had EHRs implemented equal to their main site.

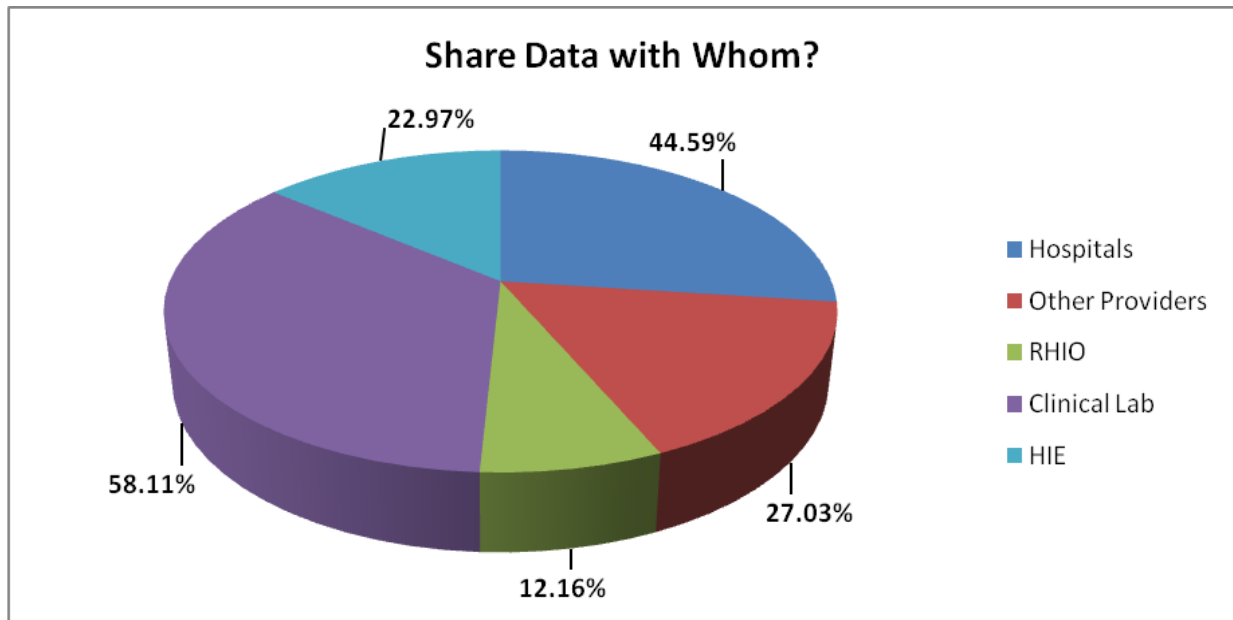


Sharing Data Electronically

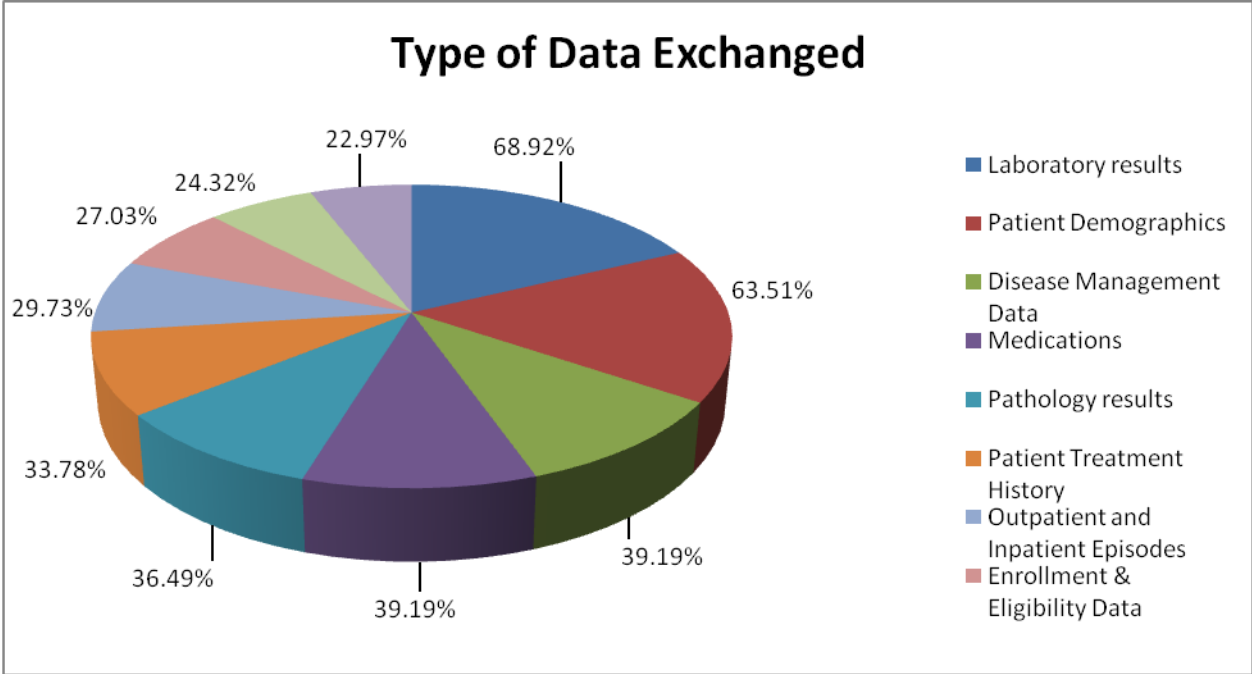
Having an EHR in and of itself does not mean that data is being shared among providers in a timely fashion when it is needed at the point of care. Of the 362 health centers that responded to the survey less than twenty five percent 20.44% (N=74) identified that they shared data electronically i.e. not by fax.



For those 74 health centers that responded that they did share data health centers most frequently share data electronically with Clinical Laboratories 58.11% (N=43), Hospitals 44.59% (N=33), Health Information Exchanges (HIE's) and/or Regional Health Information Exchanges (RHIOs) 35.13% (N=26), and Other Healthcare Providers 27.03% (N=20). Many health centers share data with more than one other entity. 27.03% (N=20) of the health centers that share data identified that they share data with two entities and 18.92% (N=14) identified that they share data electronically with three entities.



The data most frequently shared by the seventy four health centers that did share data was identified as Laboratory Results at 68.92%, Patient Demographics at 63.51%, Disease Management Data at 39.19%, Medications at 39.19%, Pathology Results at 36.49% and Patient Treatment History at 33.78%.

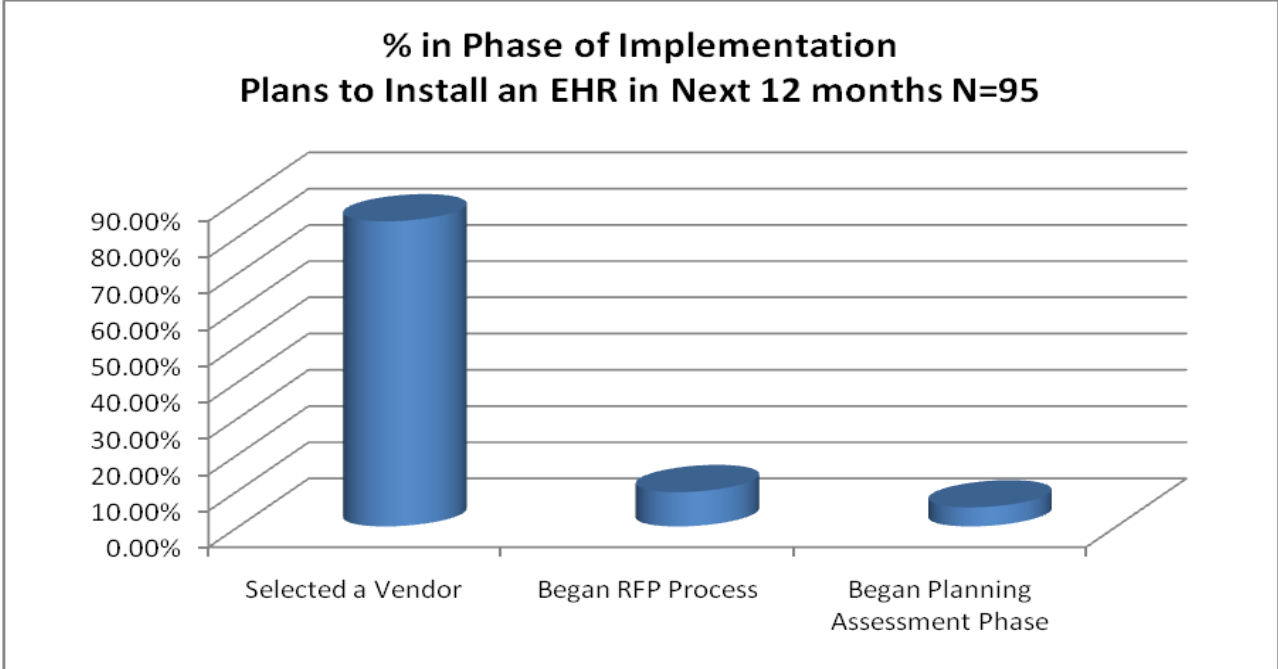


Plans for Installing a new EHR in the next 12 months

Many health centers that responded to the survey are actively in process of installing EHRs and 51.08% (N=95) of the 186 health centers that responded and did not already have an EHR identified that they are planning to install an EHR within the next 12 months.

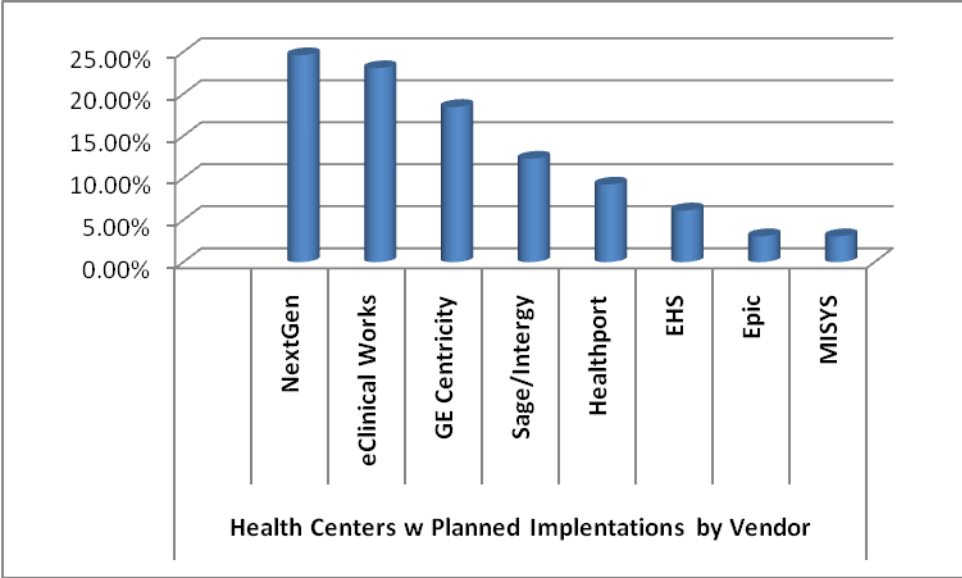
Phase of Implementation

Fully 84.21% (N=80) identified that they had already selected a vendor while 9.47% (N=9) identified that they had started the RFP process and 5.26% (N=5) identified that they had started the Planning and Assessment Phase. One center did not respond to the question.



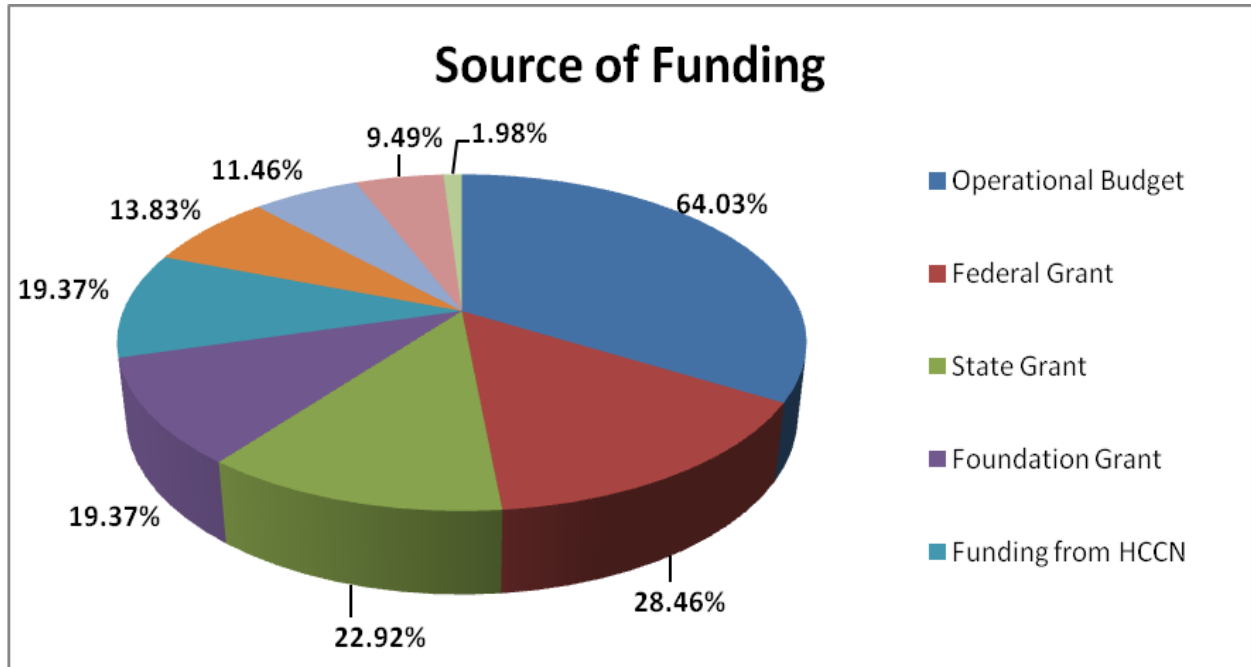
Vendor Selection for Planned Implementations

It is not surprising that when we looked at the vendors that had been selected the vendor selection of those centers planning to implement EHRs closely mirrors the vendor selection of health centers that have already implemented EHRs.



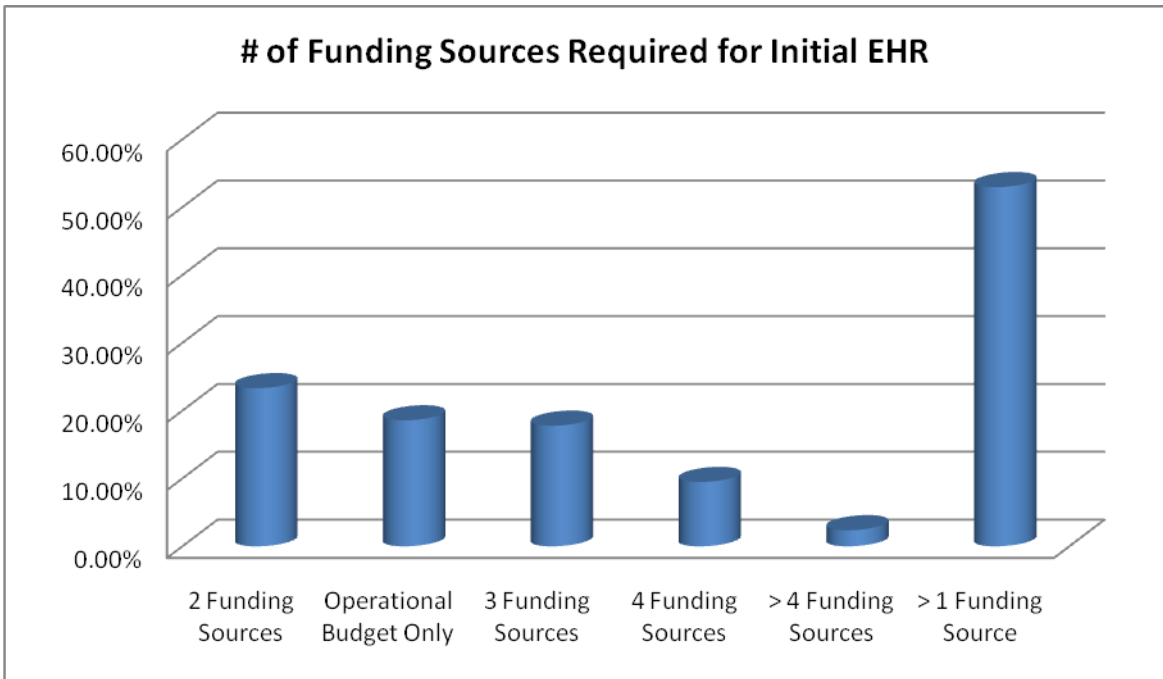
Sources of Funding for Initial EHR Implementation

Of the health centers that responded as having an EHR or being in process of implementing an EHR there are a number of funding sources for EHR implementation identified. These are depicted in the graph below. It should be noted that only 18.58% (N=47) of the health centers identified that they were able to support funding their initial EHR implementation from their operational budget ONLY.



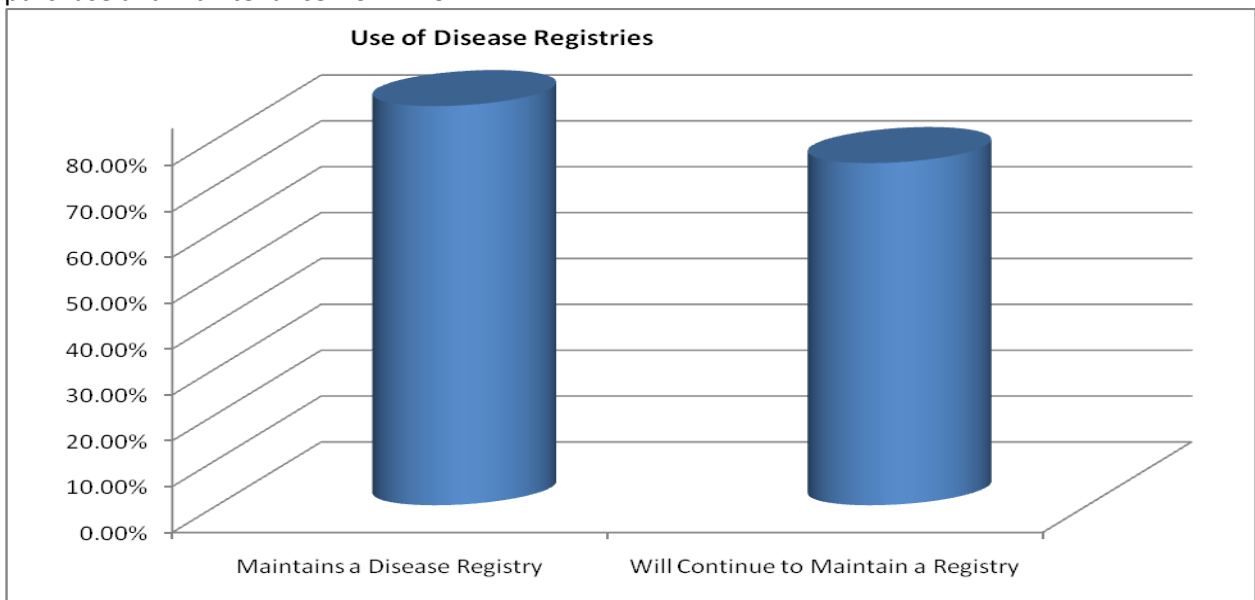
Number of Funding Sources Required to Purchase Initial EHR

Over 52% of the health centers identified that they required more than one funding source to implement their EHR with over 17% requiring three funding sources and over 9% requiring four funding sources. It would seem that initial funding of EHRs remains a significant barrier to EHR implementation in health centers.



Use of Disease Specific Registries

Health centers have a long history of participation in disease collaboratives and utilizing disease registries as tools to track patients with specific chronic conditions and improve care coordination and quality care to patients. Of the health centers that responded to the survey 87.02% (N=315) identified that they maintained a disease specific registry. This speaks to the commitment to quality care provided by health centers as well as to their ability to move forward with technology given their limited resources. Disease registries were initially used by health centers in 1998 sponsored by a CDC grant. They were then further developed and spread throughout health centers with ongoing support for development and funding for purchase and maintenance from HRSA.

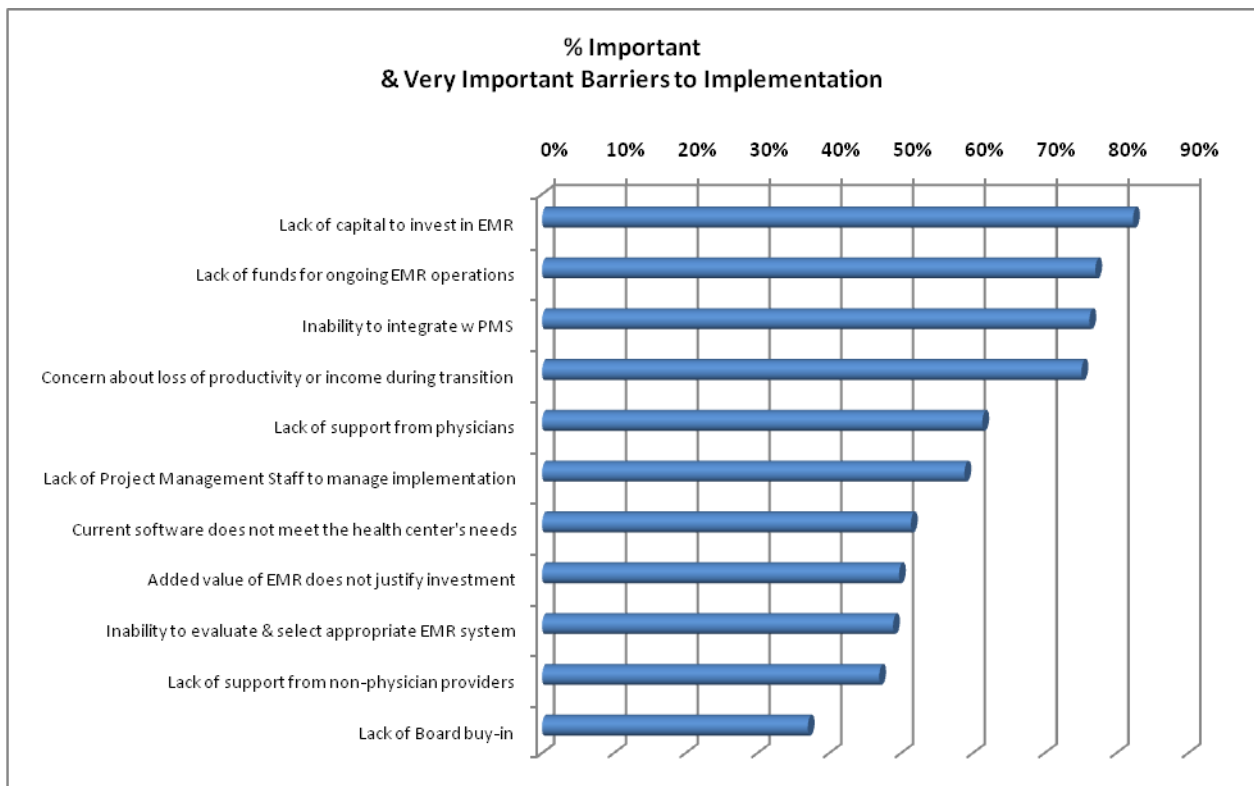


HRSA has recently withdrawn its support for the ongoing maintenance of disease registries in health centers. When we questioned health centers regarding their willingness to maintain their disease registry without the support of HRSA for ongoing maintenance almost three quarters 74.6% (N=235) identified that they would continue to maintain their registries.

Almost 60% of the health centers that responded identified a single vendor as their disease registry. This is the same registry that was supported by HRSA in the past. It is significant that 16.5% identified that this was a function of their EMR. We took a closer look at the centers that had identified this functionality in their EMR and identified that twelve health centers utilized one of the top three vendors and ten health centers utilized another of the top three vendors to perform their disease registry functions.

Barriers to Implementation and Maintenance of EHRs

Health centers were requested to identify barriers to their implementation and maintenance of EHRs and were asked to rate several indicators as “Not at all Important”, “Somewhat Important”, “Important” or “Very Important”. Although there were some differences when comparing the responses that were rated as “Important” vs “Very Important” when we combined the responses health centers rated the following factors as being “Important” or “Very Important”: **Lack of Capital to invest in EHRs** was reported by over 80% of health centers as being a barrier and **Lack of funds for ongoing EHR operations** was reported by over 75% of the health centers while **Inability to integrate the EHR with the practice management system** was reported by just over 75% and **Concern regarding loss of productivity during transition to the EHR** was reported by 75%.

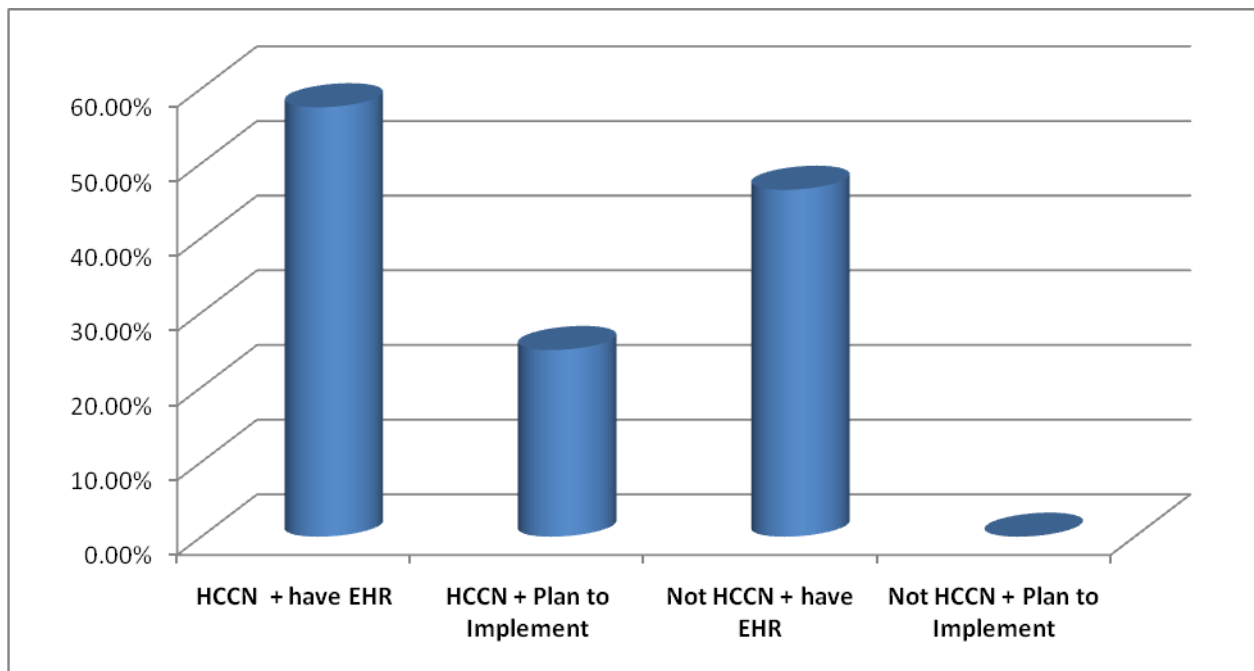


De installation of an EHR

A surprising number of health centers responding to the survey have actually installed an EHR and have gone through a de-installation process. Of the 176 health centers that identified they had an EHR in place 10.23% (N=18) identified that they had gone through a de-installation process. There were another 8 that did not currently have an EHR that also identified that they had gone through a de-installation process. Reasons for this warrant further investigation, however, this may indeed be due to factors such as lack of appropriate clinician involvement in the initial planning phase and lack of clinical leadership which are often cited as reasons for project failure. Lack of skills in project planning and staff involvement at appropriate levels may need to be further considered in all training programs for health centers contemplating making the investment and implementing an EHR.

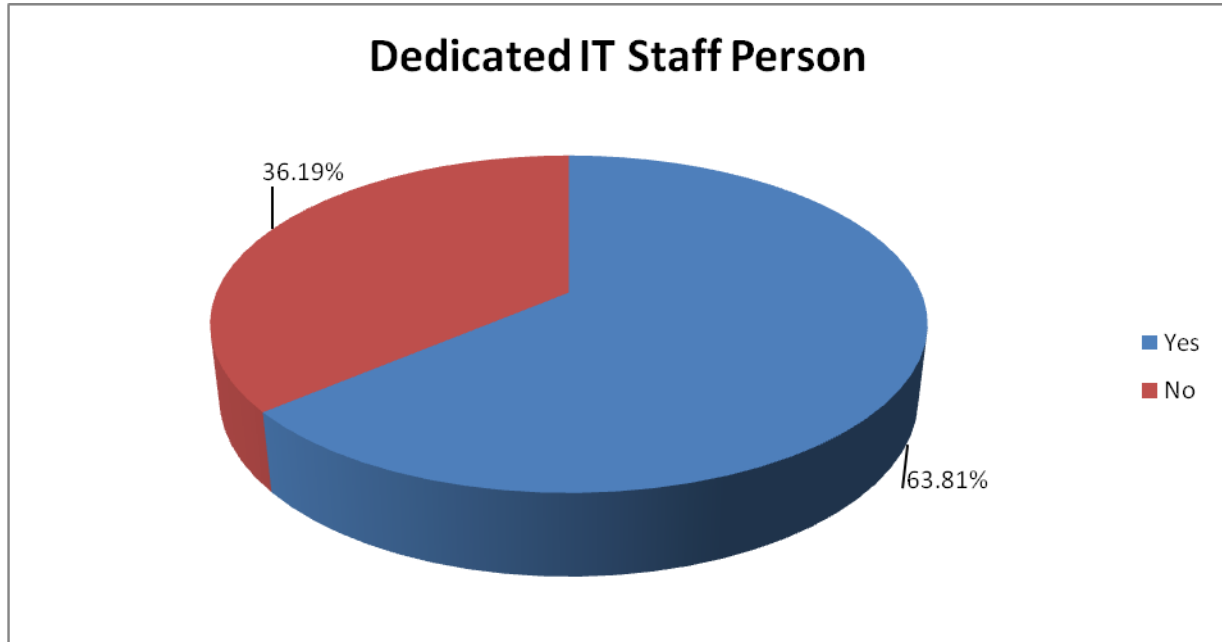
Membership in a Health Center Controlled Network (HCCN)

Health Center Controlled Networks (HCCNs) are groups of 3 or more health centers that come together to share resources such as administrative services, performance improvement and HIT. HCCNs must be 51% controlled by health centers. Of the health centers that responded 22.10% (N=80) identified that they were part of a HCCN. Of these 57.5% (N=46) identified that they were using an EHR. An additional 25% (N=20) identified that they were planning to implement an EHR in the next twelve months. Of these 20 that identified they had plans to implement an EHR in the next twelve months 85% (N=17) identified that they had already selected a vendor. When compared to the remaining 282 health centers which were not part of a HCCN 46.45% (N=131) identified that they had an EHR, however, of the remaining 151 health centers that were not part of an HCCN 0% identified that they had plans to implement an EHR in the next twelve months. It would seem that being part of an HCCN has a positive effect on readiness and continuous movement towards EHR implementation among health centers.



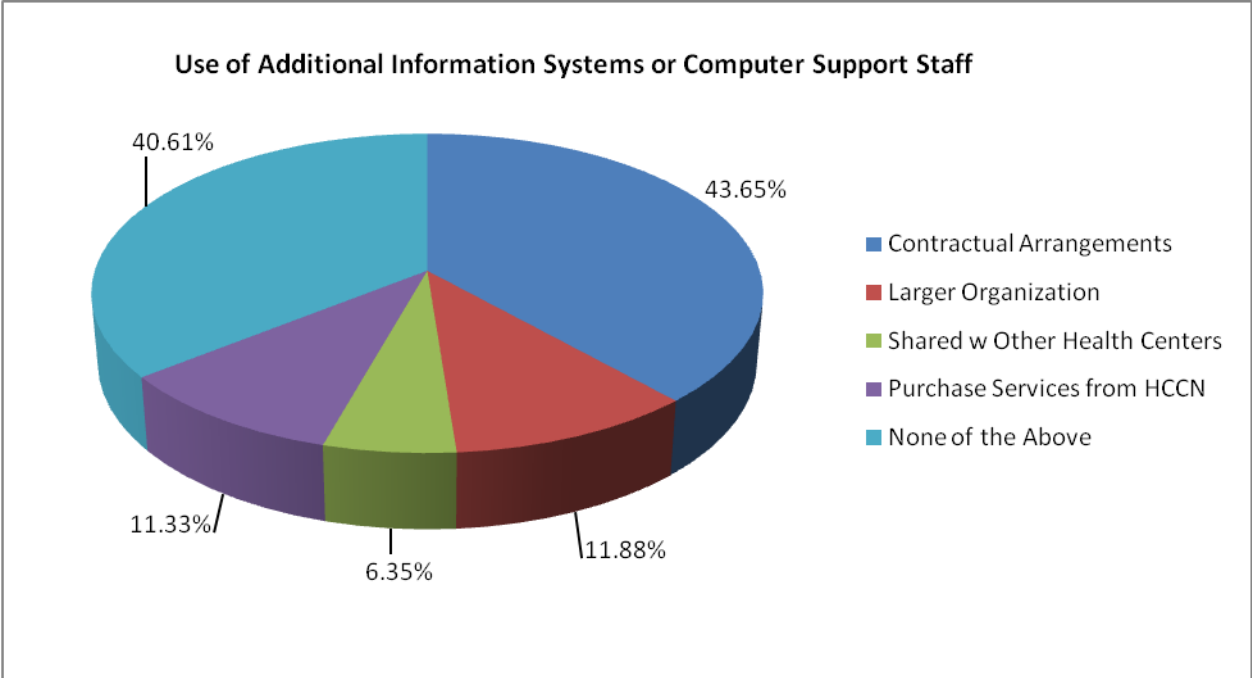
Dedicated IT Staff

Only 63.81% (N=231) of the health centers that responded identified that they had a dedicated IT staff person.



Use of Additional Information Systems or Computer Support Staff

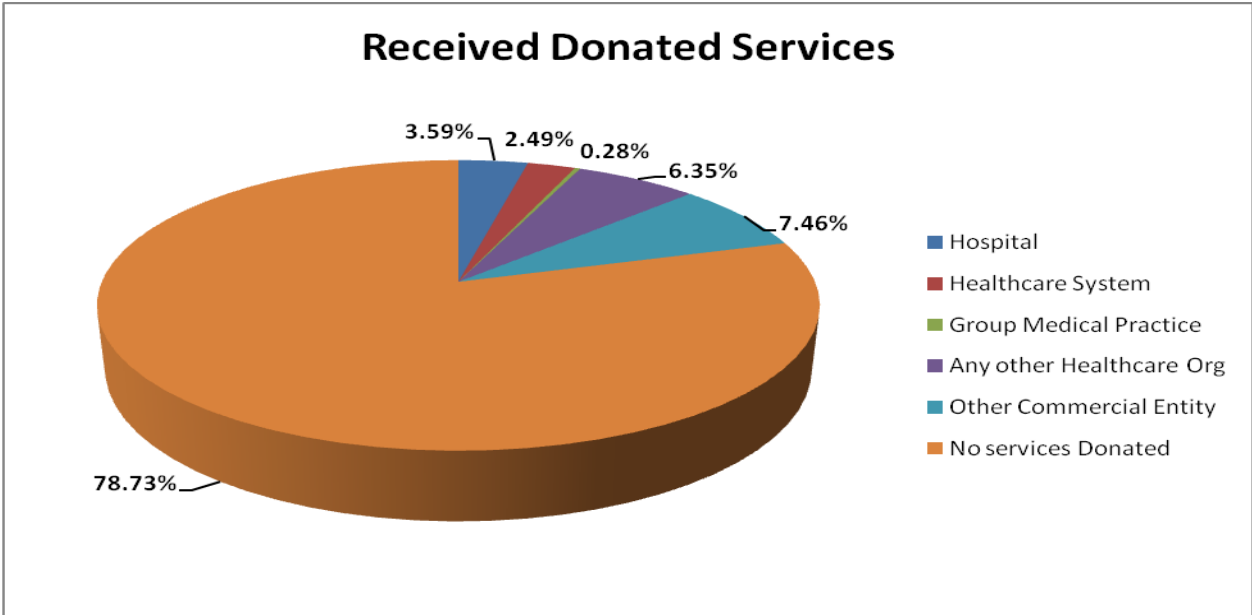
Health centers were asked about their utilization of additional information system or computer support staff. They were requested to identify all uses of additional resources. Over 70% of health centers utilized additional information systems or computer support staff. Contractual arrangements were identified by 43.65% of the health centers, Services provided by a larger organization 11.88%, Purchased from an HCCN 11.33%, and Shared with other health centers 6.35%. 40.61% of the health centers that responded did not utilize additional computer staff from outside the health center.



The results of these two questions point to health centers experiencing the same health information technology workforce shortages that have been identified by other organizations.

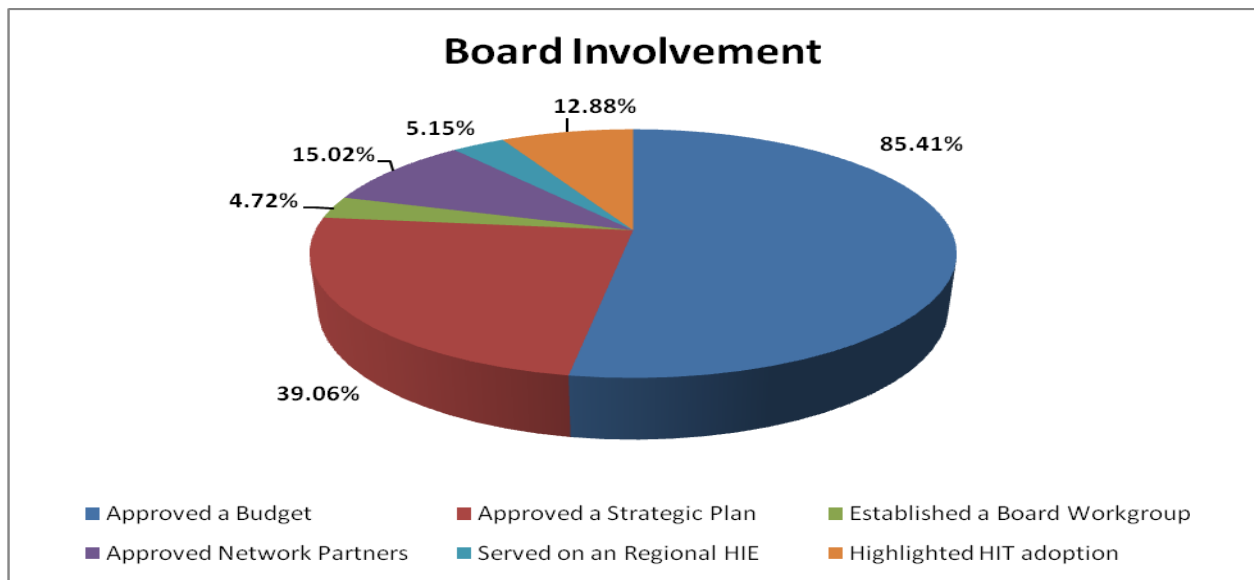
Use of Donated HIT Software or Related Support Services

When we reviewed the extent that health centers might partner with other entities in receiving donated HIT related services it was striking that very few of the responding health centers identified that they did receive any donated hardware, software or support services from other entities in the last twelve months. 78.3% identified that they had not.



Board's Role in Implementation

The health centers that either had an EHR in place or were in process of implementing an EHR were questioned regarding the role their Board played in implementing the EHR. Health center boards are very active in HIT implementation. 85.41% of the health centers identified that their Board was involved in approving a budget for implementation of an EMR and 36.06% of them approved a strategic plan. It would seem that the current boards rely on the skills, knowledge and resources of their executives as there was not much indication of the board actively approving network partners, forming specific workgroups or participating in a health information exchange in their area. More focused training for board members may be required in order to provide them the knowledge base and skills to become more active in these higher level and more intensive HIT activities. In response to the need for board member training NACHC has instituted two HIT workshops targeted towards Board members at its major conferences.



EHR Implementation as part of a Quality and Business Plan for Monitoring and Improving Fiscal and Clinical Issues

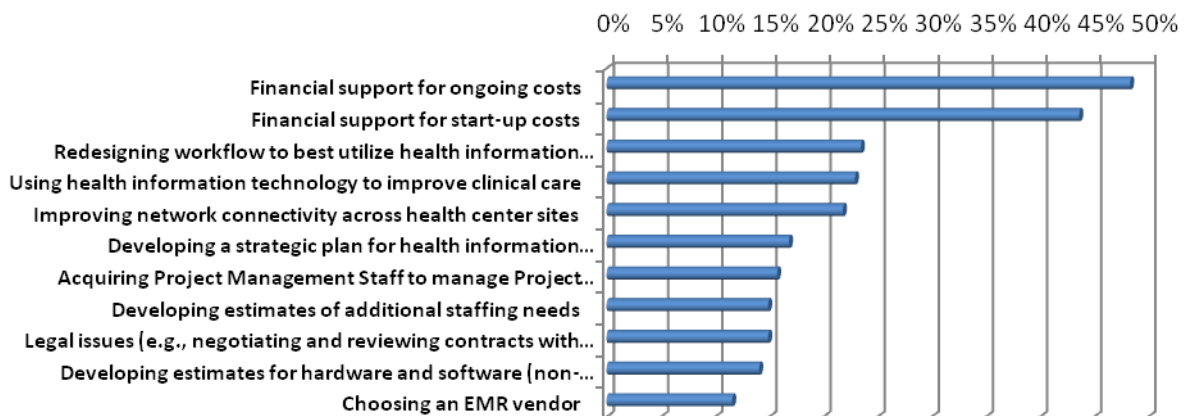
Of significant importance in health center operations is the integration of EHR implementation into their overall business and quality strategy. Of the health centers that responded 77.35% (N=280) identified that EHR implementation was part of the Quality/Business Plan for monitoring and improving fiscal and clinical issues. Of those that identified that it was part of their Quality/Business Plan 61.07% identified that it was a written plan.



Health Center Identified Needs to build HIT Capacity

Health centers were requested to identify their needs with respect to building HIT capacity. The most identified needs according to the centers that responded to this survey question were financial support for ongoing EHR costs 48.35% (N=175) and financial support for initial EHR costs 43.65% (N=158). Combined over 90% of health centers identify that their number one need in order to move forward is financial support. Workflow redesign to best utilize health information technology 23.48% (N=85), learning how to use health information to improve clinical care 22.93% (N=83) and improving network connectivity across health center sites 21.82% (N=79) were all identified as the next most needed areas of assistance. This data is important as it identifies gaps in the healthcare IT workforce at health centers in the higher levels of HIT implementation (workflow redesign and HIT expertise and the highly technical area of data connectivity) and the area of health informatics. Workflow redesign and healthcare informatics requires a skill set that combines clinical and HIT expertise. The area identified as being the least necessary in order to proceed was the actual selection of an EHR.

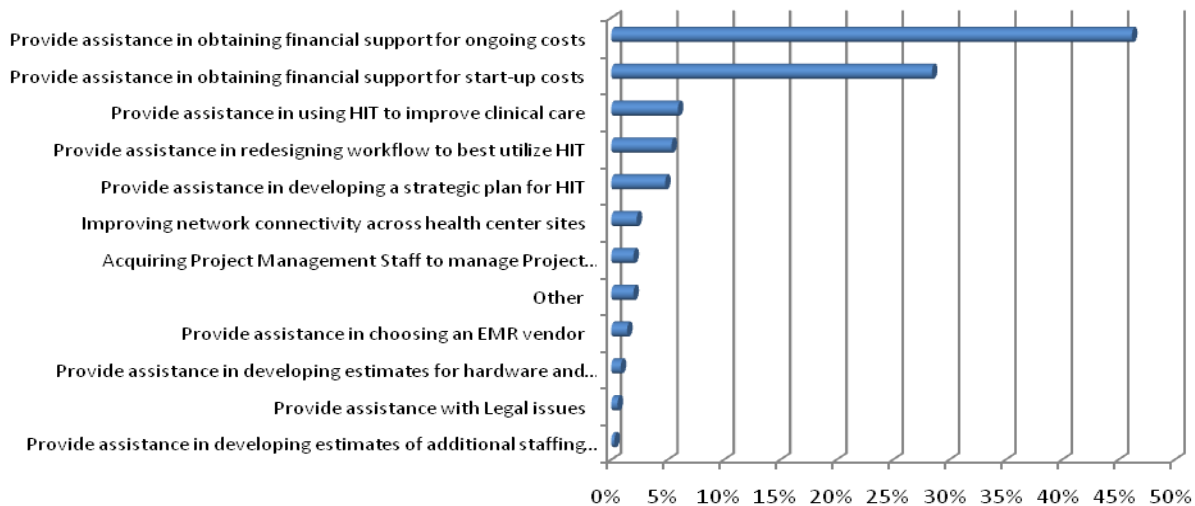
Identified Needs to Build HIT Capacity



The Single Most Important thing that NACHC could do for Health Centers

When asked what the single most important thing NACHC could do for them health centers responded in similar fashion to their identified needs. Of the 355 responses to this question 74.65% (N=265) of the health centers identified that providing funding for ongoing costs or for initial costs of EHR implementation was the single most important thing NACHC could do. It is important to note that obtaining financial support for ongoing costs was ranked higher at 46.2% (N=164) than obtaining financial support for start-up costs which was identified by only 28.45% (N=101) as the single most important activity. Although identified at a far less frequency the areas of providing assistance in using HIT to improve clinical care, providing assistance with workflow to best use HIT and improving network connectivity were ranked similarly at 5.92% (N=21), 5.35% (N=19) and 4.79% (N=17) respectively.

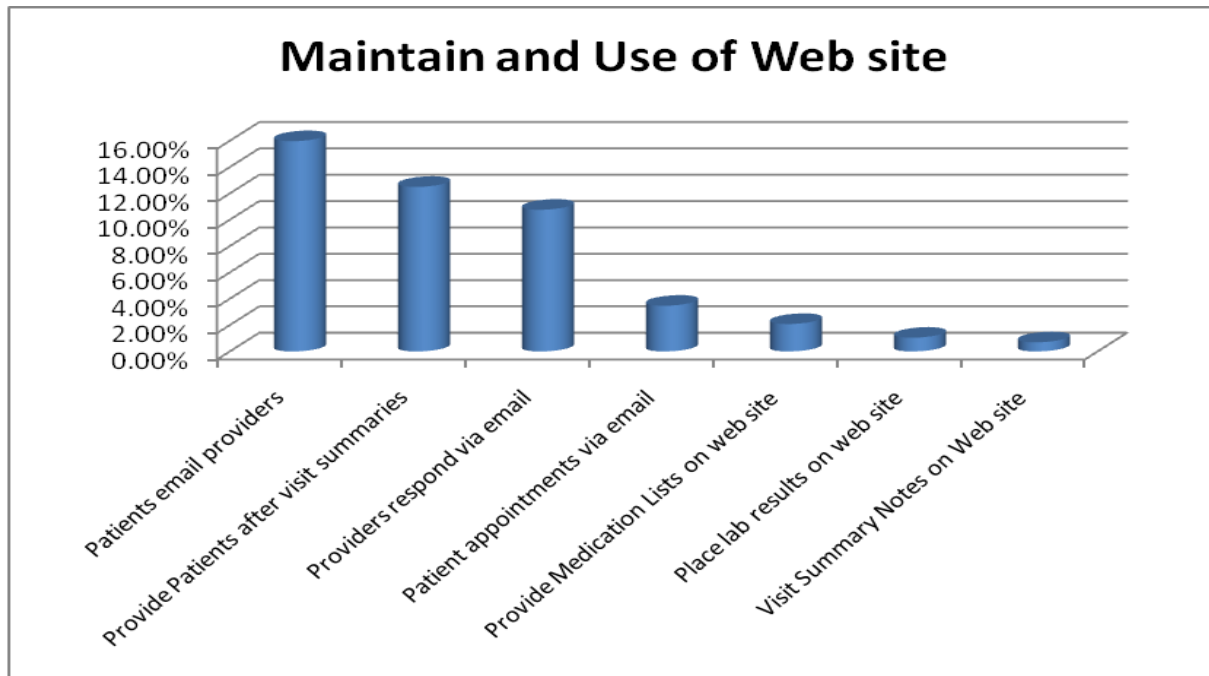
Single Most Important thing NACHC Could Do



These three identified needs mirror the results of the capacity building question and will help to shape NACHC's training and technical assistance efforts for the future.

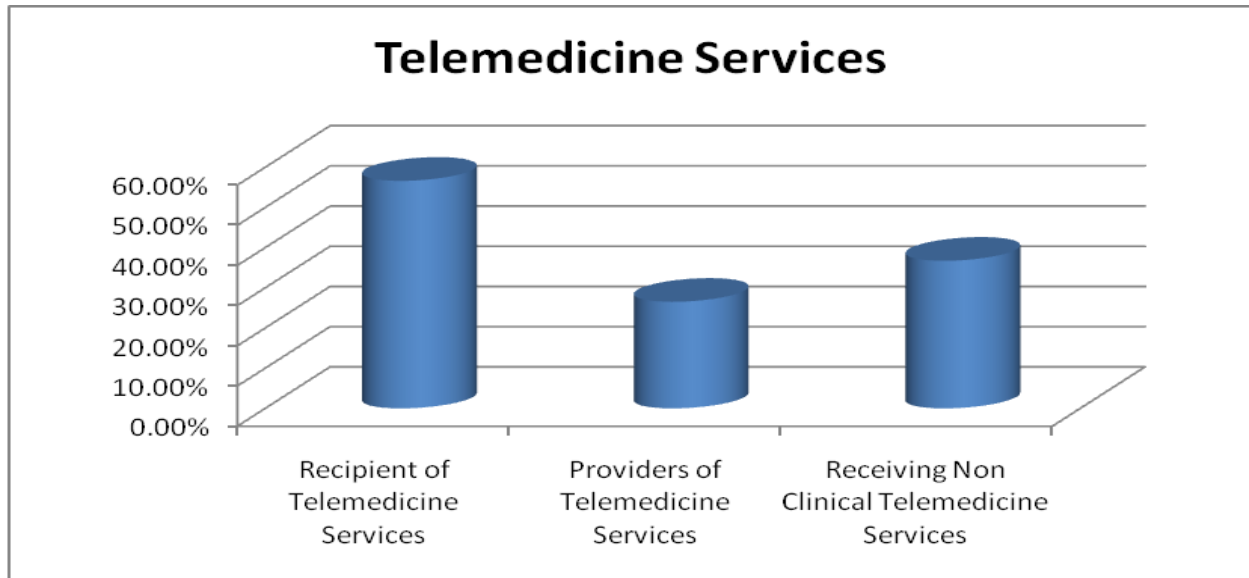
Maintaining a Web Site

Of the health centers that responded 79.56% (N=288) identified that they do maintain a web site. Only 11.43% (N=33) of these however, indicated that they were able to track the number of hits to the site. We also queried health centers regarding some of the more patient interactive uses of their web sites, however, health centers in general had very low levels of response to the areas of actually using their web site to interact with patients. Only 3.47% (N=10) of the health centers that responded identified that patients had the ability to make appointments via the web site. Patients had the ability to Email providers at 15.97% (N=46) of the health centers that responded, Providers could Respond to patients via email at 75% (N=31) of the centers, three health centers 1.04% Placed lab results on the web site; Medication lists were provided on the web site by 2.08% (N=6), After patient visit summaries were provided to patients by 12.5% (N=36) and Notes describing what was discussed during visit were on web site or portal for patients to see in only 0.69% (N=2) of the centers.



Use of Telemedicine

Health centers were asked about their use of telemedicine. They were questioned as to whether they were a recipient of telemedicine services, a provider of telemedicine services, who they receive telemedicine services from or provide telemedicine services to.



Recipients of Telemedicine Services

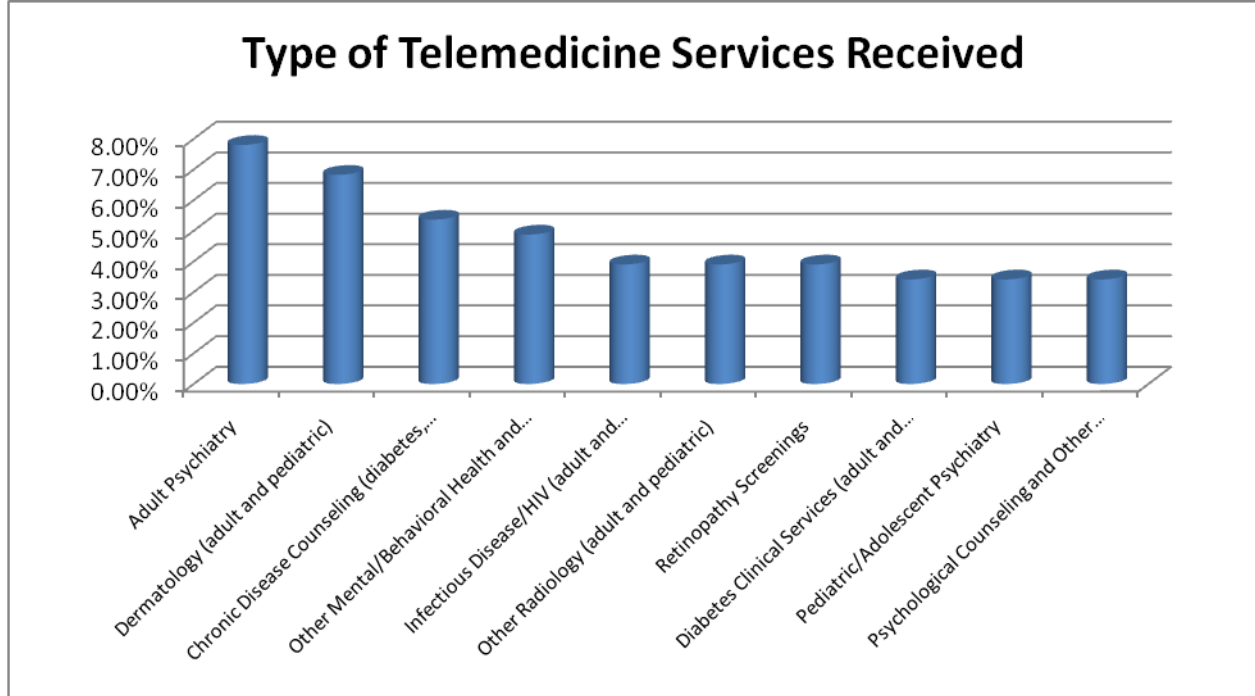
The responses indicate that of the of the 362 health centers that responded to the survey 56.62% (N=205) identified that they were a recipient of telemedicine services. There was a wide variation in the nature of services they received and included:

Telemedicine Services Received

- Adult Echocardiology
- Adult Psychiatry
- Allergy/Rheumatology/Immunology
- Cardiovascular Surgery (including pre- and post- surgery)
- Chronic Disease Counseling (diabetes, cardiac rehab., etc.)
- Clinical Pharmacology/Clinical Pharmacy
- CT and MRI Interpretations (adult and pediatric)
- Dentistry (adult and pediatric)
- Dermatology (adult and pediatric)
- Diabetes Clinical Services (adult and pediatric)
- ENT (adult and pediatric)
- ENT Surgery (including pre- and post- surgery)
- Gastroenterology (adult and pediatric)
- General Pediatrics
- General Surgery(incl.pre-and post- surgery)
- Genetics and Genetic Counseling (adult and pediatric)
- Geriatrics
- Hematology (adult and pediatric)
- Home Health - NOS
- Hospice Services
- Infectious Disease/HIV (adult and pediatric)

Interventional Cardiology
Neonatology
Nephrology (adult and pediatric)
Neurology and Neurodevelopmental (adult and pediatric)
Obstetrics/Gynecology
Oncology (adult and pediatric)
Orthopedic Surgery (including pre- and post- surgery)
Orthopedics (adult and pediatric)
Other - NOS
Other Endocrinology Clinical Services (adult and pediatric)
Other Mental/Behavioral Health and Counseling - NOS (family, adult, pediatric)
Other Radiology (adult and pediatric)
Other Rehabilitation (adult and pediatric)
Other Surgical Specialties - NOS (including pre- and post- surgery)
Other Therapy - NOS (adult and pediatric)
Pathology
Pediatric Echocardiology
Pediatric/Adolescent Psychiatry
Physiatry/Physical Medicine(adult and pediatric)
Physical Therapy (adult and pediatric)
Plastic Surgery (incl.pre- and post- surgery)
Primary Care (adult)
Psychological Counseling and Other Services (adult and pediatric)
Pulmonology (adult and pediatric)
Retinopathy Screenings
Routine Adult Cardiology (includes CHF)
Routine Pediatric Cardiology
Speech Therapy (adult and pediatric)
Substance Abuse Services
Trauma
Wound Care/Decubitus Ulcers(adult and pediatric)

The most frequently received telemedicine services are:



Telemedicine Services Provided

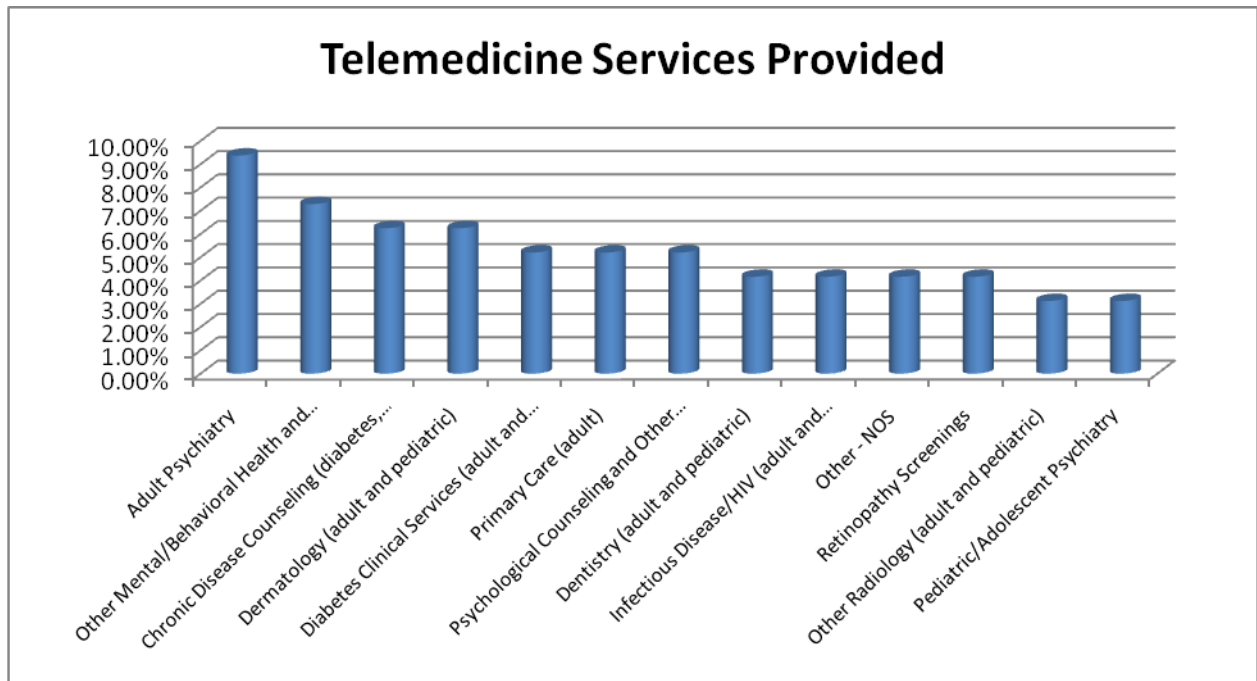
The responses indicate that of the of the 362 health centers that responded to the survey 26.52% (N=96) identified that they were a provider of telemedicine services. There was a wide variation in the nature of services they provided and included:

Services Provided

- Adult Echocardiology
- Adult Psychiatry
- Allergy/Rheumatology/Immunology
- Cardiovascular Surgery (including pre- and post- surgery)
- Chronic Disease Counseling (diabetes, cardiac rehab., etc.)
- Clinical Pharmacology/Clinical Pharmacy
- CT and MRI Interpretations (adult and pediatric)
- Dentistry (adult and pediatric)
- Dermatology (adult and pediatric)
- Diabetes Clinical Services (adult and pediatric)
- ENT (adult and pediatric)
- ENT Surgery (including pre- and post- surgery)
- Gastroenterology (adult and pediatric)
- General Surgery(incl.pre-and post- surgery)
- Genetics and Genetic Counseling (adult and pediatric)
- Home Health - NOS

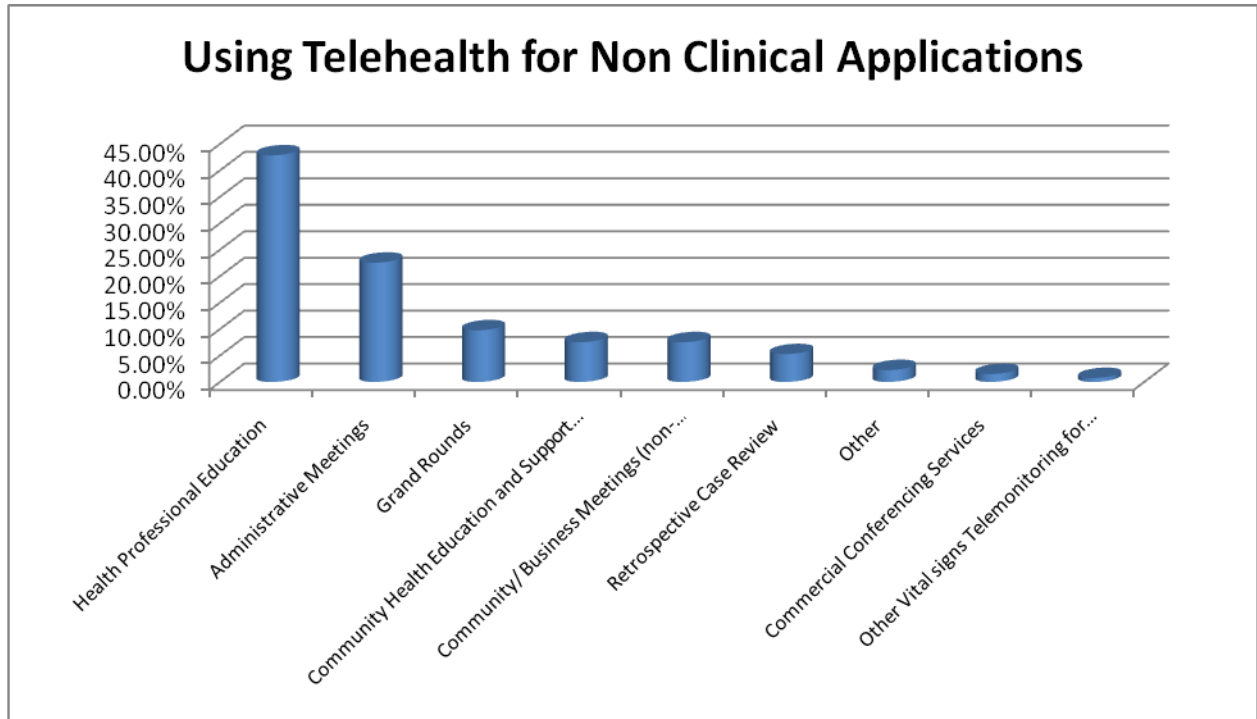
- Hospice Services
- Infectious Disease/HIV (adult and pediatric)
- Interventional Cardiology
- Nephrology (adult and pediatric)
- Neurology and Neurodevelopmental (adult and pediatric)
- Obstetrics/Gynecology
- Orthopedic Surgery (including pre- and post- surgery)
- Other - NOS
- Other Endocrinology Clinical Services (adult and pediatric)
- Other Mental/Behavioral Health and Counseling - NOS (family, adult, pediatric)
- Other Radiology (adult and pediatric)
- Other Therapy - NOS (adult and pediatric)
- Pathology
- Pediatric Echocardiology
- Pediatric/Adolescent Psychiatry
- Physiatry/Physical Medicine(adult and pediatric)
- Physical Therapy (adult and pediatric)
- Primary Care (adult)
- Psychological Counseling and Other Services (adult and pediatric)
- Pulmonology (adult and pediatric)
- Retinopathy Screenings
- Speech Therapy (adult and pediatric)
- Wound Care/Decubitus Ulcers(adult and pediatric)

The most frequently provided telemedicine services are:



Other Telehealth Services

Health centers are also utilizing telehealth for other non clinical applications. Of the centers that responded 36.74% (N=133) identified that they used telehealth for non clinical applications. The most frequently utilized non clinical application was for health professional educational activities 42.86% (N=57). A number of health centers that identified that they were using telehealth services 22.56% (N=30) identified that they utilized these services for administrative meetings.



Publication Support

This publication was supported by Grant/Cooperative Agreement Number UC30CS08661 from the Health Resources Services Administration, Bureau of Primary Health Care (HRSA/BPHC). Its contents are solely the responsibility of the author and does not necessarily represent the official views of HRSA/BPHC.

Acknowledgements: *Special thanks and recognition is given to various agencies and individuals who provided insight and/or review and input into the development of the survey. These include: Michelle Proser, NACHC, Shira Gitomer, NACHC, Katja Laepke, NACHC, Caryn Bernstein, NACHC, Ronnie Egan, NACHC, Beth Kujawski, NACHC, Kathleen McNamara, NACHC, Dr. David Stevens, NACHC, Cheryl Austein-Casnoff, Health Resources Services Administration, Office of Health Information Technology (HRSA OHIT), Susan Lumsden, HRSA OHIT, Christie Brown, HRSA OHIT, Johanna Barazza-Cannon, HRSA OHIT, Christopher Lim, HRSA OHIT, Dena Puskin, HRSA Office for the Advancement of Telemedicine, Dr. Karen Bell, Office of the National Coordinator (ONC), Dr. David Hunt, ONC, Yael Harris, ONC, Dr. James Sorace, HHS Office of the Assistant Secretary for Program Evaluation, Keith Mclinnes, Agency for Health Research and Quality (AHRQ), Feygele Jacobs, Ryan Community Health Network Foundation (RCHN), Dr. Peter Shin, George Washington University, Colleen Lampron, National Network for Oral Health Access (NNOHA) and Chuck Ignoglia, National Council for Community Behavioral Health Centers (NCCBH), and the Primary Care Associations and Health Center Controlled Networks that assisted in obtaining responses.*

Footnotes:

1. Assessing the Economics of EMR Adoption and Successful Implementation in Physician Small Practice Settings; Department of Human Services, Office of the Assistant Secretary for Planning and Evaluation (ASPE), September 2006
2. DesRoches, C. et al, New England Journal of Medicine, June, 2008