August 2013

PHR Ignite

Environmental Scan: The Personal Health Record Landscape of Utah and New Mexico

Prepared for

Office of the National Coordinator for Health Information Technology
U.S. Department of Health and Human Services
300 C Street SW
Washington, DC 20201

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Contents

Tables

Number   **Page**

1. EXECUTIVE SUMMARY

The goal of this environmental scan is to assess the essential characteristics and features of personal health records (PHRs) available to consumers in Utah and New Mexico and to characterize the legal and technical environments that influence how these PHRs operate.

Utah and New Mexico have very different underlying characteristics that influence health information technology (HIT) adoption and penetration. New Mexico has a pronounced digital divide between urban and rural areas, and electronic health record (EHR) adoption among providers is lower in New Mexico than in Utah. New Mexico also has a culturally and linguistically diverse population. Over one third of residents speak a language other than English, a significant barrier, considering that many PHRs are not offered in different languages. Utah, in contrast, has very high internet connectivity and EHR adoption compared with other states. Utah's population is homogenous: 92 percent of residents are white.

Privacy and security requirements established under the Health Insurance Portability and Accountability Act (HIPAA) do not apply universally to all PHR vendors. This gap in governance coupled with the lack of a consistent definition of a PHR may have the unintended consequence of confusing consumers about the privacy and security protections PHR vendors are obligated to provide and the circumstances under which they must be provided. For example, a consumer using a non-HIPAA-covered PHR must rely on the protections declared in the vendor use agreement and privacy policy, and accept the security risks of storing their medical information with a third party. In both New Mexico and Utah, state laws are silent on PHRs.

Technical issues that influence PHR adoption in both states include: lack of data standards, underdeveloped communication protocols, and Meaningful Use (MU) requirements. New guidance on standards and data exchange will allow greater patient control of the PHR in the future and a more complete record that can be populated with data from different providers. MU is a key driver, and MU criteria are having an impact on the development of PHR design and technical functionalities.

For the functionality and attributes assessment, we reviewed a sample of 15 PHRs, representing a range of types (including both HIPAA-covered and non-HIPAA-covered options). These PHRs were assessed on the following attributes:

- Accessibility

- Import and editing capabilities

- Export and data sharing

- Types of data available

- Provider contact

- Health tracking and improvement

- Health care costs

Our assessment revealed several core attributes common to most PHRs. It also highlighted some key limitations and gaps in knowledge that will be addressed in the next phase of the project, including the following:

- whether non-HIPAA-covered PHR user agreements provide adequate privacy and security protections to consumers;

- availability of the access log/audit trail for PHRs for which information was not obtained;

- the privacy and security aspects of using a Quick Response (QR) code;

- validation of techniques used by the non-HIPAA-covered PHRs to obtain information from health care facilities;

- ability of PHRs to support health tracking and improvement features such as graphical information display for clinical information or reward programs that have meaning to users; and

- functionalities to support direct provider contact including a messaging system.

These gaps will be addressed through discussions with subject matter experts in the next phase of the project. The next phase will also include discussions with various stakeholders to identify preferences about the use of PHRs in practice.

2. INTRODUCTION

This report was created as part of the Office of the National Coordinator for Health Information Technology's (ONC's) State Health Policy Consortium project under the direction of RTI International. A bi-state collaborative team consisting of staff from *HealthInsight* Utah and *HealthInsight* New Mexico, Utah Health Information Network (UHIN), and the Utah Department of Health (UDOH) was charged with conducting an environmental scan to assess the availability and functionality of personal health records (PHRs) available to consumers in Utah and New Mexico. Through literature review and exploration of various PHR products, the team sought to identify essential characteristics and features of PHRs and to recognize the legal and technical environments that influence how these PHRs operate in the two states. The scan also identifies the gaps in current knowledge about the PHR landscape; these gaps will be addressed through discussions with subject matter experts in the next phase of the project. The next phase will also include discussions with various stakeholders to identify their preferences for the use of PHRs.

2.1 Definitions

Although there is no universal definition for a PHR, the Health Information Technology for Economic and Clinical Health (HITECH) Act defines a PHR as "an electronic record of PHR identifiable health information on an individual that can be drawn from multiple sources and that is managed, shared, and controlled by or primarily for the individual."[1] More than 100 PHRs and 750 electronic health records (EHRs) with varying degrees of PHR functionality are available on the U.S. market.[2] For this report, we categorize PHRs into two broad categories: those provided by entities covered under the Health Insurance Portability and Accountability Act (HIPAA[3]) and those not provided by entities not covered under HIPAA. This latter type of PHR is typically offered directly to consumers by a PHR vendor and is governed by the Federal Trade Commission, other applicable state laws, PHR user agreements, and licensing.

We found that HIPAA-covered PHRs were easier to identify because they are offered by local health systems and plans and, therefore, have a larger relative market share. In contrast, the penetration and utilization of non-HIPAA-covered PHRs are more difficult to assess

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[1] The term ''PHR identifiable health information'' means individually identifiable health information, as defined in section 1171(6) of the Social Security Act (42 U.S.C. 1320d(6)), and includes, with respect to an individual, information—
(A) that is provided by or on behalf of the individual; and
(B) that identifies the individual or with respect to which there is a reasonable basis to believe that the information can be used to identify the individual.

[2] Michael Bass Group. Special report—Patent valuation report. 2012, January. http://www.michaelbass.com/PDF/JAN20MMRF.pdf. Accessed July 30, 2013.

[3] Personal Health Records and the HIPAA Privacy Rule. http://www.hhs.gov/ocr/privacy/hipaa/understanding/special/healthit/phrs.pdf. Accessed July 30, 2013.

because they are available on a national scale, and no definitive secondary source of information regarding the extent of their usage exists.

2.2   PHRs versus Patient Portals

The initial efforts of the project involved a robust discussion about the difference between PHRs and patient portals (PPs). Available resources and the current literature do not clearly define the differences between PHRs and PPs; it was therefore important to clarify the similarities and differences between these two terms. In general, PPs are tied to a health care provider's EHR, allowing consumers to view the parts of their medical record that are shared by the provider. Usually consumers cannot add or modify information, though some PPs nationally have tested this functionality and it may become an option in the future. Nor can consumers continue to use a particular PP if they move to a provider with a different EHR system. PHRs, on the other hand, are usually not linked to a single provider, meaning that consumers have more options for collecting data from multiple sources, self-entering information, and portability. PHRs may be less convenient or usable because data may not be auto-populated by all providers involved in an individual's care. Because these generalized differences are not absolute, both PPs and PHRs are considered equally in this report under the umbrella term PHR. For this scan, the above framework will be used to describe the PHR landscapes in New Mexico and Utah.

3. STATE ENVIRONMENTS

Before delving into the PHR landscape assessment, we reviewed some of the underlying characteristics of Utah and New Mexico that may accelerate or impede PHR adoption and use. On a variety of comparators—geographical, demographic, cultural, economic, health access, technology adoption—Utah and New Mexico are very different. In this section we compare and contrast the environments in which PHRs operate in these two states.

3.1 Utah Landscape

The state of Utah has two major health care enterprises: Intermountain Healthcare and the University of Utah Medical Group. As of 2013, Intermountain Healthcare has 22 hospitals and 185 clinics in Utah.[4] The University of Utah Medical Group has four hospital facilities and 10 clinics in Utah and provides care to more than 850,000 patients annually, most of them Utahns, though some are from neighboring states.[5] Studies have shown that these two enterprises together encompass more than 75 percent of patient care provided to Utahns. *HealthInsight* Utah works with more than 120 independent physician offices. Table 3-1 lists the dominant health care systems and payors.

Table 3-1. Dominant Payors and Providers in the Utah Market

Health Plans/Payors	Hospitals/Health Systems	Primary Care Networks
University of Utah Health Plans	University of Utah (4 hospitals)	University of Utah (10 community clinics)
Select Health	Intermountain Healthcare (22 hospitals)	Intermountain Healthcare (185 clinics, 18 for low-income)
Medicaid/Medicare	Veterans Affairs Hospital System	
Veterans Administration	Mountain Star	
Regence BlueCross BlueShield of Utah		
Molina Healthcare of Utah		
United		

Utah providers have a very high rate of health information technology (HIT) adoption: 84 percent of office-based physicians in Utah use an EHR system.[6] A secondary survey

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[4] Available at: Intermountain Healthcare. 2013. http://intermountainhealthcare.org/Pages/home.aspx. Accessed July 30, 2013.

[5] http://healthcare.utah.edu/hospital/patients/index.html

[6] Centers for Disease Control and Prevention. NCHS Data Brief. Use and characteristics of electronic health record systems among office-based physician practices: United States, 2001-2012. 2012, December. http://www.cdc.gov/nchs/data/databriefs/db111.htm. Accessed 2013.

conducted in 2011 found that 60 percent of all physicians in Utah have adopted EHRs compared with the national average of 33.9 percent.[7, 8]

Further, Utah residents have the highest rate of internet access in the nation, according to the U.S. Census Bureau.[9] The population demographics in Utah differ from the rest of the United States in that 92 percent of the Utah population is Caucasian while the national average is 78 percent.[10] The United States Census conducted in 2007 found that 86 percent of Utahns spoke English only, whereas 80 percent of people in all states spoke English only.[11]

3.2   New Mexico Landscape

The state of New Mexico has demographic, cultural, language, and health care market features that set it apart from other states. The health insurance marketplace is competitive and changes constantly as systems are purchased, divided, and merged. Table 3-2 summarizes the predominant providers, health care systems, and payors in New Mexico.

Of the various health systems, some have PHRs that are affiliated with their EHR including:

- The University of New Mexico (Albuquerque, NM)

- Medical Associates of Northern New Mexico (Los Alamos, NM)

- Gerald Champion Regional Medical Center (Alamogordo, NM)

- Rio Grande Medical Group (Las Cruces, NM)

- Eye Associates of New Mexico (throughout NM)

- Taos Clinic for Children and Youth (Taos, NM)

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[7] National Center for Health Statistics (NCHS) analysis of National Ambulatory Medical Care Survey (NAMCS) Electronic Record Supplement.
[8] National Center for Health Statistics (NCHS) analysis of National Ambulatory Medical Care Survey (NAMCS) Electronic Record Supplement.
[9] U.S. Census Bureau. Current Population Survey, 1984, 1989, 1993, 1997, 2000, 2001, 2003, 2007, 2009, 2010, 2011, 2012.
[10] U.S. Census Bureau. State & County QuickFacts: Utah. 2013. http://quickfacts.census.gov/qfd/states/49000.html. Accessed July 30, 2013.
[11] Shin, HB, Kominski, RA. Language use in the United States: 2007, American Community Survey Reports, ACS-12. 2010. U.S. Census Bureau, Washington, DC. http://www.census.gov/prod/2010pubs/acs-12.pdf. Accessed July 30, 2013.

Table 3-2.   Dominant Payors and Providers in the New Mexico Market

Health Plans/Payors	Hospitals/Health Systems	Primary Care Networks
Medicaid/Medicare	▪ Presbyterian (8 hospitals) ▪ Lovelace (4 hospitals) ▪ UNM (2 hospitals and the state's only level IV trauma center)	New Mexico Primary Care Association (19 organizations with more than 88 primary care clinics, including Federally Qualified Health Centers)
Veterans Affairs (VA)	VA Hospital in Albuquerque	ABQ HealthPartners (19 clinics)
Indian Health Service	Indian Health Service Hospitals (5 hospitals)	Presbyterian Medical Group (18 clinics)
BlueCross BlueShield of New Mexico		IHS-affiliated or tribal-run clinics (28 clinics)
Molina	Lovelace (4 hospitals)	Rio Grande Medical Group (5 clinics in southern New Mexico)
United	University of New Mexico (2 hospitals and the state's only level I trauma center)	Eye Associates of New Mexico (15 locations throughout the state)
Presbyterian Health Plan		
Lovelace Health Plan		

Note: Both Presbyterian and Lovelace have hospitals within their systems. Presbyterian has 3 locations within the metropolitan statistical area of Albuquerque and has a network of 5 hospitals located throughout the state. Lovelace has 3 hospitals and a facility located in Albuquerque and one recently acquired hospital located in the southeastern part of the state. Of the health plans, only Presbyterian has a network of primary care sites. There are 17 clinics, 7 of which are located in Albuquerque. There are a number of primary care networks in New Mexico. ABQ Health Partners offers 19 primary care and specialty clinical sites, in Albuquerque. The other clinical systems are mostly affiliated with the New Mexico Primary Care Association membership and consist of 19 organizations including: 15 Federally Qualified Health Centers, 1 Federally Qualified Health Center look-alike, 1 Indian Health Services contract facility and 2 Public Hospital District Clinics. There is a large Veteran's Administration hospital in Albuquerque. There are 5 Indian Health Services hospitals in the state.

New Mexico lags behind the country and the region in technology usage in general. According to data collected from the 2010 Census, New Mexico trails the national average and its neighboring states in computer and internet usage.[12] New Mexico has many small, remote communities that often face several challenges in broad HIT implementation. First, about a third of the total population (694,000) resides rurally. According to data collected by the National Broadband Map in June 2011, New Mexico has one of the largest technological discrepancies in the nation between rural and urban areas. On a number of measures, including high-speed broadband access and access to wireless or wire line

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[12] See Table 4 in the Appendix A.

technologies, the state ranked among the highest in the nation as far as disparities between rural and urban communities.[13]

Language barriers are also a concern for PHR adoption and utilization in New Mexico. According to 2010 Census data, 36.2 percent of the population speaks a language other than English at home, compared with the national average of 20.3 percent (see additional language information from 2000 census in Appendix B). In 2007, Mathematica Policy Research, Inc. conducted focus groups in New Mexico with underserved communities including members from the Spanish speaking community. Participants said they had difficulties accessing health care and communicating with physicians due to language barriers. The group of participants thought PHRs could help overcome some of these problems by facilitating the flow of information from patient to provider; however, a Web search revealed that few PHRs are offered in Spanish.

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[13] U.S. Department of Commerce, National Telecommunications & Information Administration. National Broadband Map. http://www.broadbandmap.gov/. Accessed Month DD, 2013.

4. LEGAL LANDSCAPE

4.1 PHRs and PHR Vendors

The PHR market includes products that vary in scope and functionality. Although many PHR options are available, consumers have been slow to adopt PHRs. Consumers must navigate an ever-changing PHR landscape absent clarity about the privacy and security of their PHR information.[14]

Federal protections have long been in place for protected health information (PHI); however, information maintained in a PHR may not always be protected under federal privacy and security laws. Some legal advances have been made to strengthen PHR privacy and security requirements in the Omnibus Rule modifications to HIPAA;[15] however, the new requirements do not apply universally to all PHRs and PHR vendors. This gap in governance coupled with the lack of a consistent definition of a PHR may have the unintended consequence of confusing consumers about the privacy and security protections PHR vendors are obligated to provide and the circumstances under which they must be provided.

4.2 PHR Governance and Federal Privacy, Security, and Breach Regulations

Misconceptions about HIPAA and its applicability have existed since the Act's enactment and continue today. Health information is not always "protected health information" under the HIPAA rules. HIPAA applies to "covered entities," defined as health plans, health care clearinghouses, or health care providers that transmit health information in electronic form in connection with health care transactions,[16] and their business associates. HIPAA-covered entities and their business associates are required by law to protect individually identifiable health information. However, the same information held by a non-covered entity is not protected under HIPAA. For example, No More Clipboard and Microsoft Health Vault are PHRs that are offered directly to the public independent of and not on behalf of a covered entity and are not governed by HIPAA. Recent regulation,[17] released January 25, 2013, modified the HIPAA Privacy, Security, Enforcement, and Breach Notification Rules (Omnibus

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[14] Lewis, N. Consumers Slow to adopt electronic personal health records. InformationWeek Healthcare. 2011, April 8. http://www.informationweek.com/healthcare/electronic-medical-records/consumers-slow-to-adopt-electronic-perso/229401249. Accessed July 30, 2013.

[15] Health Insurance Portability and Accountability Act of 1996 (HIPAA). P.L. No. 104-191, 110 Stat. 1938 (1996).

[16] 45 C.F.R. § 160.102.

[17] U.S. Health and Human Services (HHS), Office of Civil Rights. Modifications to the HIPAA Privacy, Security, Enforcement, and Breach Notification Rules under the Health Information Technology for Economic and Clinical Health Act and the Genetic Information Nondiscrimination Act; Other Modifications to the HIPAA Rules. 78 Fed. Reg. 5566 (Jan. 25, 2013). http://www.gpo.gov/fdsys/pkg/FR-2013-01-25/pdf/2013-01073.pdf. Accessed Month DD< 2013.

Rule[18]) and extends the applicability of HIPAA to PHR vendors that meet the definition of a business associate offering PHR services as part of their business associate role.

Effective March 26, 2013, a PHR vendor is subject to HIPAA as a business associate when it offers PHRs to individuals on behalf of covered entities but not when it offers PHRs directly to individuals. A working agreement with a covered entity does not constitute a business associate; it is important to understand the business relationship. As described, "for example, if the agreement between the PHR vendor and covered entity specifies the electronic means in which a PHR vendor will receive PHI from the covered entity pursuant to individual authorization,[19] the PHR vendor is not a business associate because the vendor may not be offering the PHR on behalf of the covered entity and as such is not subject to HIPAA. However, if the agreement requires the PHR vendor to provide and manage personal health record services that the covered entity provides to the covered entity's patients or enrollees, and the PHR vendor receives access to PHI in order to provide such services, the PHR vendor is a business associate."[20] This distinction is not always transparent to the consumer, and yet the effect on privacy and security of consumer health information is significant.

A PHR vendor that is a business associate is subject to HIPAA. The vendor is directly liable for impermissible uses and disclosures of PHI. As a business associate, the PHR vendor may use or disclose PHI only as permitted or required by its business associate contract or as required by law. Generally, a business associate may not use or disclose PHI in a manner that would violate the Privacy Rule if done by the covered entity. A PHR vendor operating as a business associate is not liable to notify individuals in the event of a breach of unsecured PHI, unless this obligation is delegated to the business associate by the covered entity. However, the covered entity remains ultimately liable for notification. As a business associate, a PHR vendor is directly liable for civil money penalties under the Enforcement Rule for violations of certain HIPAA provisions.[21]

PHR vendors (and their systems) not governed by the privacy and security rules of HIPAA are held to no other federal standard for safeguarding patient data transmitted, stored, or maintained by the vendor. Further, there is no federal or state standard for how a PHR vendor operating outside the confines of a HIPAA business associate stores, transmits, or otherwise uses the patient information. The consumer using a non-HIPAA-covered PHR must

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[18] U.S. Health and Human Services (HHS), Office of Civil Rights, final rule released January 25, 2013, implements a number of provisions of the Health Information Technology for Economic and Clinical Information (HITECH) Act.

[19] 45 C.F.R. § 160.103.

[20] Drinker Biddle. Drinker Biddle's HIPAA compliance update for employee benefit plans (Client Bulletin). 2013, April 4. http://www.drinkerbiddle.com/resources/publications/2013/Drinker-Biddle-s-HIPAA-Compliance-Update-for-Employee-Benefit-Plans-April. Accessed July 31, 2013.

[21] 45 C.F.R. § 160, Subparts C, D, and E.

rely on the protections declared in the vendor use agreement and privacy policy and also must accept the security risks of storing medical information with a third party.

Although the Federal Trade Commission (FTC) regulation (16 CFR Part 318) provides requirements for PHRs not otherwise governed by HIPAA, the regulation only defines the action that PHR vendors must take in the event of a security breach. The regulations apply to PHR vendors and PHR-related service providers not governed by HIPAA, including nonprofit organizations (traditionally outside of FTC's jurisdiction) that sell or store PHRs and foreign vendors that maintain health information of U.S. residents and citizens. Types of organizations included in the regulatory scope are PHR vendors, PHR-related entities offering services through a PHR vendor, and third-party service providers that provide maintenance to a PHR vendor and access, store, maintain, destroy, modify, or otherwise hold, use, or disclose unsecured PHI as a result of the service.

The FTC Health Breach Notification Rule,[22] issued on August 17, 2009, applies broadly to non-HIPAA-covered entities that are vendors and custodians of PHRs defined as electronic records of health information that can be identified with a particular individual. The requirements apply to all breaches discovered on or after September 24, 2009, and to "foreign and domestic vendors of personal health records, PHR related entities." However, the FTC regulations do not give individuals the right to sue a PHR vendor.

Unlike HIPAA, the FTC regulation does not require standards for privacy and security of consumer health information. In addition, it is the responsibility of the consumer to read and agree to long and complex vendor use agreements. The consumer may unknowingly accept conditions that stipulate policies such as ownership and use of information by the vendor. The consumer may unintentionally agree to the vendor's use of the PHR records as it pleases and be subject only to the vendor's own policy, which may change at any time. No enforcement mechanisms exist at the federal level to ensure that patient data are kept secure and are not disclosed without authorization from the patient for PHR vendors not governed under HIPAA.

4.3   State Privacy, Security, and Breach Regulations

4.3.1   Utah

A review of plausible State regulations indicates that State statue is silent with regard to specific PHR and PHR vendor governance.

The applicability of the Utah Consumer Credit Protection Act to PHRs and PHR vendors would require a case-specific review. The Consumer Credit Protection Act specifies

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[22] Federal Trade Commission. *Health Breach Notification Rule*., 74 Fed. Reg. 42962. 2009, August 25. http://www.gpo.gov/fdsys/pkg/FR-2009-08-25/pdf/E9-20142.pdf. Accessed Month DD, 2013.

requirements that must be followed in the event of a breach of personal information by any person who conducts business in the state and maintains personal information. However, the definition of personal information is limited to defined data elements (i.e., first name, last name combined with Social Security number, financial account, credit or debit card number, security or access codes, passwords, or driver's license number). For the statue to apply, data meeting the definition of personal information must be collected, stored, maintained or transmitted by a PHR vendor.

4.3.2 New Mexico

Similar to Utah, a review of plausible State regulations indicates that State statue is silent with regard to specific PHR and PHR vendor governance.

Gaps/Needs: A review of federal and state regulation (Table 5 in Appendix A) indicates governance gaps remain and may pose a challenge to consumers in understanding whether their information in a PHR is protected. Lack of consistent standards and requirements across PHR vendors leaves the consumer to navigate the PHR environment with uncertainty and to take responsibility for understanding vendor use agreements and policies, which are often complex and difficult to digest. In general, the following legal challenges are the following:

- Differing legal protections across different PHRs—confusing to the consumer

- Little protection for non-HIPAA-covered PHRs

5. TECHNICAL SCAN

For this element of the scan, we sought to understand the technical issues that influence the EHR/PHR offerings in the state of Utah—and, by extension, other states. The 12 significant[23] vendors that work within Utah and with the Utah Clinical Health Information Exchange comprise the larger part of the Utah market and were deemed appropriate for review. The review included five—Allscripts, ClinicalWorks, Epic Systems – MyChart, GE Centricity, NextGen—that are recognized nationally as top EHR vendors:[24]

- Allscripts

- Amazing Charts

- AthenaHealth

- CaduRx

- eClinicalWorks

- Epic Systems – MyChart

- GE Centricity

- e-MDs

- HealthVault

- NextGen

- SOAPware

- SpringCharts

5.1   PHR Development

Vendors reviewed offered an EHR with a tethered PHR and, in some instances, offered a freestanding PHR, where patients can use the application without having to be connected to a specific provider, clinic, or hospital. Of the 12 vendors reviewed, 9 vendors offered tethered PHRs with a supporting EHR, while the remaining 3 vendors allowed for a freestanding function.

Three vendors partnered with software companies that specialize in PHR applications. Nine vendors have the PHR integrated within the EHR systems, while one has both options

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[23] See Table 6 in Appendix A.

[24] Richards, B. EHR market share report shows top MU vendors. J AHIMA. 2013, February 6. http://journal.ahima.org/2013/02/06/ehr-market-share-report-shows-top-mu-vendors. Accessed DD, 2013.

available (i.e., partners with an outside vendor and has an integrated PHR application). Many providers and hospitals find working with their current vendors preferable for ease of use and immediate integration with the EHR.[25]

5.2   Meaningful Use, HIE, and Government's Role in PHR Initiatives

With the adoption of Meaningful Use Stage 2 (MU2), the PHR is being used as a mechanism for clinicians or hospitals to provide information to patients. PHRs are often certified by EHR vendors in order to assist providers and hospitals in meeting MU2 requirements.

The challenge for the provider or hospital is often in obtaining a service or application that is cost effective and/or has a value to the patient.[26] The review of the roadmaps for the various vendors clearly showed the expectation for offering certified services to providers and hospitals has accelerated the use of standards and interoperability.

5.3   Technical Challenges to Creating a Cross-organizational PHR

Vendors offer exchange of information via uploading of files either by the patient or as a part of the integration with the EHR. Five vendor products reviewed allowed the patient to upload or integrate formatted messages, such as Health Level 7 (HL7) Continuity of Care Documents, while others allowed only the uploading of unstructured files such as images (TIF, GIF) or PDFs.

Ten of the vendor products allow the EHR to push formatted messages from the EHR to the tethered PHR. Four vendors will allow integration from other EHRs to the PHR. Cross-organizational exchanges are becoming more commonplace but are not yet the norm. The trend is for the PHR to become the longitudinal record for the patient. This can only be accomplished when the PHR can integrate information from disparate systems.

The technical challenges for exchanging data for each of the different systems are slowly being overcome through the adoption of standards and the certification requirements promoted by MU2. The technical challenges beyond the communication and standardized exchange formats include privacy (consent management) and authentication.[27]

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[25] B-Reay, J. A field guide to online personal health records. 2011, January. Pittsburgh, PA: Aspen Advisors. http://www.aspenadvisors.net/results/whitepaper/field-guide-online-personal-health-records. Accessed Month DD, 2013.

[26] Dolan, P. L. Will meaningful use spur growth of patient portals? *American Medical News.* 2012, September 17. http://www.amednews.com/article/20120917/business/309179967/6/. Accessed Month DD, 2013.

[27] Tang, PC, Ash, JS, Bates, DW, Overhage, GM, Sands, DZ. Personal health records: Definitions, benefits, and strategies for overcoming barriers to adoption. J Am Med Inform Assoc 2006;13(2):121–6. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1447551/. Accessed Month DD, 2013.

5.4   **National Data Standards**

Key national standards of interest include the following:

- Patient summary

- Electronic prescribing

- Electronic submission of lab results to a public health agency

- Electronic submission to a public health agency for surveillance or reporting

- Electronic submission to immunization registries

- Quality reporting

These standards are part of the certification criteria and certification program for HIT. The standards have long been needed but, until recently, had a very slow adoption rate.[28]

5.5   **State-level Data Standards**

The State of Utah does have a state rule for the exchange of clinical data, but this is the exception for the nation as a whole.[29] Rule 380-70 is governed by UDOH.[30] UDOH has designated UHIN as the convening entity for gathering the subject matter experts and stakeholders to create standards. All UHIN Standards are based on national standards that are incorporated by reference in the 45 CFR Part 170, eCFR Part 170, section 170.299, and others created by HL7. Standards are then adopted into a state rule. It is clear that creation and adoption of the exchange standards are the first steps to achieving interoperability.

The creation of implementation or usage guides for established standards is an additional challenge. Today, there may be several implementations for any one standard. Having a standard implementation for the exchanges will aid in the adoption of standards by the industry. The UHIN experience has shown that vendors are willing to accept data in a standardized manner but that they have significant issues with producing the data format standard. It is important to note that the clinical standards created by HL7 are backward compatible, making it easier to work with an incoming standard as opposed to developing a standard that is more recent than an EHR offers.

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[28] Kim, K. Clinical data standards in health care: Five case studies. 2005, July. Oakland, CA: California HealthCare Foundation. http://www.chcf.org/~/media/MEDIA%20LIBRARY%20Files/PDF/C/PDF%20ClinicalDataStandardsInHealthCare.pdf. Accessed Month DD, 2013.

[29] Ibid.

[30] Utah Department of Administrative Services, Division of Administrative Rules, Utah Administrative Code R380. Health, Administration. As in effect on June 1, 2013. http://www.rules.utah.gov/publicat/code/r380/r380-070.htm. Accessed Month DD, 2013.

Communication and operating rules or protocols

With the implementation of MU2, communication and operating rules are now being addressed in projects such as the Direct Project. The Direct Project provides a transfer protocol that allows the exchange of formatted (standardized) and unformatted (text/image) files to be exchanged between disparate systems. Other methods currently in production by PHRs include virtual private network (VPN) or secure file transfer protocol (SFTP). Both methods are prevalent and in use today. Standardized protocols should address not only the transfer of data but also ensure the security of the data being exchanged.

5.6   Emerging Themes

The roadmaps for the various vendors are moving toward more integration from disparate systems using structured formats. It appears that the MU2 criteria are having an impact on the future development of PHRs and their technical offerings.

Gaps in Gathering Information

This preliminary review allows for a summary view of the technical landscape for PHRs in both states. It will take additional specific contact with stakeholders to understand more specific technical barriers that may hinder wider consumer adoption of PHRs in Utah and New Mexico, as well as creation of a longitudinal, patient-mediated PHR.

6. FUNCTIONALITY AND ATTRIBUTES SCAN

The first step in developing the attributes scan was to identify the PHRs to be examined. Both Utah and New Mexico have a small number of large health care systems and payors that offer patients a PHR that is tethered and covered by HIPAA. The project team included nine such PHRs in the environmental scan for the first phase. The nine PHRs are Intermountain (MyHealth), the University of Utah (MyChart), the Department of Veterans Affairs (VA) (MyHealth*e*Vet), the Taos Clinic for Children and Youth (Connexion), Eye Associates of New Mexico (NextGen), Medical Associates of Northern New Mexico, the Gerald Champion Regional Medical Center (Cerner), Regence BlueCross BlueShield, and United PHR.

Identifying PHRs offered nationally by entities not covered by HIPAA was more challenging. After reviewing reports and published articles to identify the PHRs to be included in the scan from this category, the team analyzed data from five different secondary sources and compiled a grid that listed all the PHRs mentioned across all sources identified. This list included PHRs that were covered by HIPAA as well as those not covered by HIPAA. Based on the number of times a specific PHR was mentioned in the five sources, each PHR was scored by a "frequency of inclusions," which was used as an indirect metric for usage and penetration. The five sources included the following:

- Frost & Sullivan PHR market report

- Centers for Medicare & Medicaid Services (CMS) PHR pilot study report

- myPHR.com, created by the American Health Information Management Association (AHIMA)

- An article on top PHRs from the Health Care section of the online publication *InformationWeek*

- A scan completed by the University of Texas, provided by ONC

- *Personal Health Records: Selected Webliography*[31]

- A white paper by Aspen Advisors

- A list compiled by *U.S. News & World Report - Health*

The top six PHRs were identified as Dossia, MediConnect (PassportMD), Microsoft HealthVault, miVIA, NoMoreClipboard, and WebMD Health Manager. These results and methods were shared with RTI and ONC, which approved the list. A query using Google

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[31] Jones, DA. Personal health records: Selected webliography. J Consumer Health Internet 2012;16(3).

Analytics demonstrated that, based on search popularity, the Microsoft HealthVault PHR may be the best-known PHR among the non-HIPAA-covered PHRs included in the scan.

Once all the PHRs were identified, the team developed an environmental scan grid. The grid covers attributes, including categories such as accessibility and data use, data source, data types, provider contact, health tracking, and health care costs (see Table 7 in Appendix A for a list of attributes). The attributes were identified through a combination of the University of Texas's scan, the CMS pilot study, discussions between the team and RTI, and attributes that were discovered and considered valuable during the information-gathering process.

As mentioned above, the scan in this phase was comprised of 10 PHRs offered by HIPAA-covered entities, 4 PHRs offered by entities not covered by HIPAA, and 1 untethered PHR offered by HIPAA-covered entities. Data about the PHRs were gathered primarily through exploration by team members using either existing standard user accounts or new user accounts created for this purpose (in the case of the untethered PHRs). For example, a member of the team who uses the Intermountain Healthcare system in Utah navigated through the MyHealth PHR to assess its attributes. To assess the functionality provided by the untethered PHRs, we also contacted the PHR administrators to obtain access to demonstrations when we could not create user accounts ourselves. When available, scholarly publications were reviewed for additional information. For the tethered PHRs specific to New Mexico, PHR administrators provided information on the functionality of the PHR because user account access was not allocated.

The three types of PHRs (HIPAA-covered, non-HIPAA covered, and HIPAA–covered untethered) are sorted in Appendix B. The team determined that HIPAA-covered PHR versus non-HIPAA-covered PHR is the most crucial distinction, so the following comparison of attributes will focus on that difference.

Attributes: General

Summary: This phase of the environmental scan included 11 PHRs classified as HIPAA-covered and made available to patients by eight health care providers and two payors and 2 PHRs classified as non-HIPAA-covered. One of the attributes we assessed was whether the PHR included health information on just individuals or on individuals and families.

Findings indicate that all HIPAA-covered PHRs included individual patient data, and most of the non-HIPAA-covered PHRs allowed the primary account holder to document the health information of his or her family members as well.

Limitations identified in the functionalities: Although the non-HIPAA-covered PHRs are unable to display health information for families, this is due to the fundamental difference

between PHRs that allow patients to populate the data themselves and PHRs that automatically populate the data from an electronic system. To include family information, the HIPAA-covered system would have to link patients as one family unit, which is currently beyond the functionality available in many EHRs.

Attributes: Accessibility and Support

Summary: All the HIPAA-covered PHRs were available at no cost to patients. However, a few of the non-HIPAA-covered PHRs provide very basic functionality to consumers, with additional functionality available via a subscription fee. All the PHRs included in the scan were accessible via a web interface; however, accessibility via a mobile application was not widely available, and only the University of Utah (MyChart) was currently available via a mobile application. Similarly, only the PHR provided by the VA Medical Center (MyHealth*e*Vet) allows patients to access their data using a Quick Response (QR) code. All the PHRs were accessible using secure, authenticated credentials, thus to ensure patient privacy and security. Some vendors allow for additional connections through standard communication protocols such as SFTP or VPN.

While none of the non-HIPAA-covered PHRs provided live support to patients, we found that a few of the HIPAA-covered PHRs provided live support to patients. The attribute associated with access log or audit trail describes the details regarding access to the PHR account, including the dates and times of the account access, which could be used to identify usage frequency. This specific attribute was included because we thought the availability of this specific functionality would have an impact on the MU2 measures pertaining to access and usage of PHRs by patients. While most of the PHRs included this functionality, it was surprising that both the PHRs available by the most dominant health care enterprises in Utah did not include an audit trail that was visible to the patient using the PHR.

Gaps in information: Further exploration of the availability of the access log or audit trail for the PHRs for which information was not obtained may be beneficial because it may impact an entity's ability to meet MU2 measures. QR codes are being widely used (e.g., scanning a boarding pass); however, very few PHRs in this study provided this functionality, which would provide easy access to a patient's health record. The privacy and security aspects of using a QR code and identifying the steps undertaken by those PHRs offering it to meet the privacy and security requirements should be investigated further.

Limitations identified in the functionalities: Very few of the PHRs were available in other languages. Languages such as Spanish are increasing in prevalence. This limitation impacts PHR penetration, preventing interested patients from accessing their own data. Unfortunately, few PHRs offer multiple languages or the ability to translate from one language to another. PHR forms can be found online in Spanish, but are limited to use with bi-lingual providers.

Attributes: Import and Edit Capabilities

Summary: All the HIPAA-covered PHRs had the functionality to populate patient information automatically, either directly from the EHR or via other electronic systems. Some of the non-HIPAA-covered PHRs included the automatic population of patient data, provided that the patients consented and the health care facility had the capability of sharing data. All types of PHRs allow users to enter, edit, and delete their health information. However, the HIPAA-covered PHRs offered very limited functionality for allowing patients to enter data, including limited write privileges and almost no edit or delete privileges.

Gaps in information: We could not identify different techniques used by the HIPAA-covered PHRs to obtain information from health care facilities. While some PHRs mentioned employing structured imports using standards such as the Continuity of Care Document (CCD), the process used by PHRs that obtain health information via facsimile and require manual data entry are not clear.

Limitations identified in the functionalities: HIPAA-covered PHRs automatically populate a patient's health information. However, the data present in this type of PHR do not reflect the health care received at other facilities if data are not imported and consolidated. The non-HIPAA-covered PHRs attempt to bridge this gap by allowing patients to enter their health care information based on services received by multiple facilities. However, the automated importing capabilities of most such PHRs are not sufficiently robust and they require a fair amount of data entry. Non-HIPAA-covered PHRs rarely include functionality to import and integrate patient data via continuity of care records (CCRs) or direct messaging.

Attributes: Health Tracking and Improvement

Summary: PHR use should allow patients to track their own health information—such as the ability to track weight, Body Mass Index, and blood pressure—over time, with the goal of improving their overall health status; however, the environmental scan found that the industry has mixed ideas as to the best attributes for health tracking and improvement. Health Assessment tools, a means for individuals to gauge their current health status, are not a function of most PHRs, whether or not they are HIPAA-covered. One exception is the payor-offered PHRs that each provided health assessment functionality. Another attribute, tracking health behaviors/symptoms, was more consistently offered by the products reviewed in this scan. All of the non-HIPAA-covered PHRs, and payor-affiliated PHRs, offered this functionality while only a few provider-tethered PHRs did so. Patients and providers often need to see data tracked on a chart, and all non-HIPAA-covered PHRs we reviewed offer these types of graphical displays. Only half of the HIPAA-covered PHRs offer graphical data organization. The graphical features available in the non-HIPAA-covered PHRs were also more sophisticated than those found in the HIPAA-covered PHRs. It is possible that since some of the non-HIPAA-covered PHRs require a subscription fee, it is more important that these PHRs are more user friendly, thus more desirable.

6-4

Providing educational resources via a PHR is growing more popular due to MU Stage 1 and MU2 requirements, and this environmental scan demonstrates this functionality is widely available. For both types of PHRs, more than half were offering educational resources, and some that were not offering educational resources compensated by offering these resources through their organizations' websites.

Gaps in information: In multiple instances during the environmental scan, the team was not able to determine if the PHR could display and/or track clinical information graphically. In addition, while a small minority of the reviewed PHRs offers reward programs, the details associated with each program, such as discounts for participation in preventive care programs or incentives for portal use, were not specified in any detail.

Limitations identified in the functionalities: For the HIPAA-covered PHRs, the management of preventive and chronic care management is limited. With the exception of MyUHC, reminders for preventive services and connection to health tracking devices are not available options. Alternatively, some but not all of the non-HIPAA-covered PHRs reviewed provide preventive reminders and the ability to connect to health tracking devices. Two of the reviewed PHRs were offering educational resources through the website of the providing organization, but not specifically through the portal. Educational resources specifically tied to the patient's condition are potentially much more powerful. A final drawback found in the environmental scan is that very few PHRs feature rewards programs.

Attributes: Export and Data Sharing

Summary: Nearly all PHRs examined have some functionality for sharing or using data with caregivers or family members beyond viewing in a web browser, but these functionalities vary. HIPAA-covered entities primarily grant shared access to the PHR only to the parents of minor children. In some cases, in-person requests or documents proving power of attorney are required. More non-HIPAA-covered PHRs than HIPAA-covered PHRs have options for allowing secure electronic access, such as for the PHR user to share information with his or her health care provider. Almost all PHRs facilitate downloading and printing; some allow these reports to be customized by including only selected types of data. About two-thirds of all PHRs examined, regardless of type, include the ability to create a printed emergency card.

Gaps in information: Sufficient information was gathered from all the PHRs examined.

Limitations identified in the functionalities: The ability to share data varied widely across PHRs. Sharing information across health care providers with different electronic health records should be an essential function of a PHR, as it would allow engaged consumers to facilitate their own health information exchange (HIE) improve care coordination. Privacy is an important concern with PHRs, but it should not be prohibitively difficult for parents of

children and caregivers to access records. Downloading and printing are generally possible among the examined PHRs and are other key functions that allow data sharing in the absence of technical connections. The ability to select which data are shared or downloaded merits further examination: while selectivity preserves patient choice and privacy, it may obscure important parts of a patient's medical history that could impact future care, such as negative interactions between antidepressants and other medications.

Attributes: Types of Data Available

Summary: The types of data available through PHRs generally include a standard set of information such as medical conditions, family history, immunizations, and medications. Availability of some other classes of data varies widely among current PHRs. Interestingly, nearly all non-HIPAA-covered PHRs have the functionality to view medical images, whereas none of the other ones do. PHRs offered through payors usually include claims information as part of the broader member portal that includes the PHR; some but not all of these populate the PHR with health data drawn from claims. Of the non-HIPAA-covered PHRs, most do not have a place for claims data: MediConnect allows users to enter data manually, and HealthVault has apps that connect to certain payors. Inclusion of laboratory data is ubiquitous and is often a main feature of EHR-connected PHRs. Two HIPAA-covered PHRs (Intermountain Healthcare's MyHealth and Eye Associates of New Mexico) include a place for HIE consent, but this function was not present in other PHRs reviewed. Those same PHRs include a section for advance directives, but not for Physician Orders for Life-Sustaining Treatment (POLST) forms. Only one HIPAA-covered PHR allows the user to upload a POLST form (University of New Mexico). A few non-HIPAA-covered PHRs allow the user to upload an advance directive or POLST form.

Gaps in information: It was not clear for a few of the PHRs if there was a location for uploading a POLST form.

Limitations identified in the functionalities: A major limitation—primarily in HIPAA-covered PHRs—is the lack of ability to view medical images. This technical challenge has been overcome by many non-HIPAA-covered PHRs. Cost is an important concern for many consumers, so the ability to store claims data would likely be seen as valuable. All PHRs should include a place to upload Advance Directive and POLST forms. These forms are often difficult to locate when they are needed and are important to ensure patients' end-of-life wishes are executed. In many states, legal protection for electronically stored forms will need to be improved.

Attributes: Provider Contact

Summary: Generally speaking, non-HIPAA-covered PHRs and payor-based, HIPAA-covered PHRs offer limited ability for the user to interface with his or her health care provider. Few PHRs allow viewing and scheduling of appointments, and two different PHRs allow

prescription refill requests from a pharmacy and also secure messaging, if the provider is connected to the email-type system. HIPAA-covered PHRs associated with a health care facility or system have more options, but none offer all of the functionalities listed in the grid: reminders for scheduled appointments, view appointments, schedule appointments, cancel appointments, request prescription refills from a pharmacy, and secure messaging. Some functionalities depend on whether an individual provider chooses to participate.

Gaps in information: Certain specific provider contact attributes were difficult to identify for PHRs that were studied without a fully functional user account or if contact was dependent on the provider being connected to the messaging system.

Limitations identified in the functionalities: Scheduling is a practical and easy use of a PHR. On this dimension, HIPAA-covered PHRs have a distinct advantage. The inconsistency and variability of functionalities offered was surprising, including for example the ability to cancel an appointment but not to schedule one. Expanding to include all the permutations of scheduling and requiring associated providers to participate would quickly increase the value of PHRs, even for consumers that did not make use of other attributes.

Attributes: Health Care Costs

Summary: The PHRs that offer the most thorough attributes associated with reporting and managing health care costs are those tethered PHRs provided by the payors (United and Regence BlueCross BlueShield). Both of these organizations offer PHRs that track expenses, detail insurance coverage information, and provide a care cost estimator for patients trying to budget or compare the cost of different procedures. The HIPAA-covered PHRs do not provide any health care cost information to their customers, with the exception of Intermountain Healthcare, which provides expense tracking, coverage information, and a care cost estimator. The non-HIPAA-covered PHRs all offer insurance coverage information; however, only one provides health care expense tracking, and none provide a care cost estimator.

Gaps in information: One PHR had no information as to the health care cost functionality.

Limitations identified in the functionalities: Beyond the payor-provided PHRs, very limited functionality exists for estimating cost/coverage of patients' health care among the PHRs reviewed. Considering this aspect of health care is critically important to patients and consumers, the absence of this functionality is a significant drawback.

7. CONCLUSIONS

Drawing on secondary resources and, in some cases, firsthand experience with the PHR products included in our analysis, this document summarizes the PHR landscapes in Utah and New Mexico. In completing the environmental scan, we identified key gaps in information that could not be gathered through this approach alone:

- Legal: Consumers using a non-HIPAA-covered PHR must rely on the protections declared in the vendor use agreement and privacy policy and also accept the security risks of storing their medical information with a third party. Further exploration is warranted as to how many of these user agreements provide adequate privacy and security protections to consumers.

- Technical: Limited information was available regarding specific technical barriers that may hinder wider consumer adoption of PHRs in Utah and New Mexico and the creation of a longitudinal, patient-mediated PHR.

- Accessibility and Support: We will investigate the availability of the access log/audit trail functionality for the PHRs for which information was not obtained. The privacy and security aspects of using a QR code and the steps undertaken to meet privacy and security requirements by those PHRs offering it should be investigated further.

- Import and Edit Capabilities: We could not identify different techniques used by the non-HIPAA-covered PHRs to obtain information from health care facilities. While some PHRs mentioned using structured imports that use standards such as the CCD, the process used by PHRs to obtain health information may be rudimentary, involving facsimile and manual data entry and are not entirely clear.

- Health Tracking and Improvement: In multiple instances during the environmental scan, the team was not able to determine if the PHR could display and/or track clinical information graphically. In addition, while a small minority of the reviewed PHRs offers reward programs, the details associated with each program (i.e., discounts for participation in preventive care programs, incentives for portal use) were not specified.

- Provider Contact: Certain specific provider contact attributes were difficult to identify for PHRs that were studied without a fully functional user account or if contact was dependent on the provider being connected to the messaging system.

In the next phase of the PHR Ignite project, we will draw on stakeholder discussions to complement this report with information from subject matter experts. This additional information will be added to the above assessment for the final analysis and report.

8. APPENDIX A

Table 4: Computer and Internet Access by State

	New Mexico	USA	Colorado	Arizona	Nevada	Oklahoma	Texas	Utah
Individual lives in household with Internet access	64.1%	75.9%	77.9%	79.1%	80.5%	71.4%	71.6%	85.5%
Individual accesses the Internet at home	53.3%	65.0%	69.0%	64.6%	66.6%	62.0%	59.9%	72.9%
Individual accesses the Internet from some location outside of home	39.6%	38.9%	43.1%	40.4%	33.8%	39.1%	38.4%	40.8%
Individual lives in household with a computer	71.1%	81.4%	82.1%	84.2%	84.9%	77.5%	79.0%	89.9%
Type of computer for individuals who live in household with computer								
Desktop or laptop	69.2%	79.6%	80.5%	81.9%	81.1%	74.5%	q76.0%	88.5%
Handheld	9.9%	21.2%	25%	24.1%	19.7%	22.5%	24.2%	31.6%

Table 5: Federal and State Regulations Reviewed

Citation	Title	Summary	Analysis
45 C.F.R. parts 160 and 164, subparts A and E, 45 C.F.R. parts 160 and 164, subparts A and C, and 45 C.F.R. parts 160, subparts C through E, respectively	HIPAA	Modifications effective 3/25/2013 include Personal Health Record vendor as a Business Associate	Portions of the HIPAA and Enforcement regulations apply to vendors that are business associates.
16 CFR Part 318	FTC Breach Notification Rule	Applies to 3 types of organizations: PHR vendors, PHR related entities, and third party service providers. Must notify FTC in event of breach.	Only applies to breach and stipulates notification to FTC.
UCA §13-44-202	Consumer Credit Protection Act	This is specific to breach notification. This law may apply to personal health records that maintain computerized information that meets the definition of personal information. Personal health records that are regulated by state or federal law and maintain procedures for a breach of system security under applicable law are considered to be in compliance with this law.	This law only applies to computerized data containing personal identifying information on Utah residents. Definition of Personal information is limited to a person's name coupled with Social Security Number, account number, credit or debit card number, security code or access code to the persons account, driver's license number, or identification number. There is no provision for other personal data or a catch all for data that could otherwise be used to commit identity theft. Therefore, personal information that is not enumerated is not subject to

			notification.
UCA §58-67- 803	Utah Medical Practice Act	This law establishes practice criteria for health care professionals	Silent on PHRs – Establishes a joint interest in the medical record; the provider retains ownership of the record but the patient is granted specific rights in accordance with HIPAA.
UCA §78B-5-618	Patient Access to medical records	This law makes a distinction between providers governed and not governed by 45 CFR Parts 160 and 164 (HIPAA).	Silent on PHRs- *For example, if the agreement between the PHR vendor and covered entity specifies the electronic means in which a PHR vendor will receive PHI from the covered entity pursuant to individual authorization, the PHR vendor is not necessarily offering the PHR on behalf of the covered entity and may not be a business associate. However, if the agreement requires the PHR vendor to provide and manage personal health record services that the covered entity provides to the covered entity's patients or enrollees, and the PHR vendor receives access to PHI in order to provide such services, the PHR vendor is a business associate.*

Table 6: PHRs/Vendors Included in the Technical Scan

Vendor	Who owns the PHR	Standard Message Exchange	PHR Populated by	Connectivity methods
Health Vault	Developed and owned by Health Vault - offers PHR through provider EHR and as a standalone PHR	Health Vault offers ASTM E2369 Standard for the Patient summary	Allows formatted and unformatted uploads or hand entry	Web site
AllScripts	Offers PHR through providers EHR and as a standalone PHR. They Partner with Intuit and have an organic Universal health record called "Follow MyHealth"	All Scripts - Can accept standard messages from other EHRs	Patient must data enter or upload unformatted documents to populate the PHR	E-mail or WEB Interface, USB
Amazing Charts	Offers PHR through provider EHR Partners with UpDocs for software	No messaging standard used	Patient must data enter or upload unformatted documents to populate the PHR	E-mail or print image uploads via website
AthenaHealth	Offers PHR through the Provider EHR. Software developed and owned by AthenaHealth	AthenaHealth offers databridge to connect to a lab through an HL7 message	Allows formatted and unformatted uploads or hand entry	Website access
Cadurx offers portal DirectMD throught provider and as a stand alone (for free to public)	Offers PHR (DirectMD) through provider and as a standalone (for free to public)Developed and own by Cadurx - DirectMD	CADURX - tethered the system can accept standard messages the untethered cannot.	Allows formatted or unformatted uploads or hand entry	Cadurx - e-mail/print images/unformatted data uploads

e-Clinical works offers through the EHR	Developed and owned by e-Clinical works	e-Clinical works does support HL7 interface and non-formatted file. Can also connect providers that are not part of eClincal	Allows formatted or unformatted uploads or hand entry	Website or SFTP
Spring Charts	Spring Charts: offers PHR through EHR. Partners with No More Clipboard	Standard messages accepted through tethered system with EHR, un-tethered cannot. No other standard.	Allows for hand entry	SOAPware - Email, export pdf's to patient
SOAPware	Offers PHR through EHR. Developed and owned by SOAPware	Standard messages (HL7) accepted through tethered system with EHR, un-tethered cannot.	Allows unformatted uploads or hand entry	SOAPWare - E-Mail , use of PDFs
NExtGen:	Offers PHR through EHR. Developed and owned by NexGen.	Standard messages accepted through tethered system with EHR, un-tethered cannot.	Allows unformatted uploads or hand entry	NexGen: Web Interface
GE	Offers PHR Through the EHR. Centricity was developed and owned by GE. The software can be used by other EHRs.	GE Uses HL7 Transactions for message exchange. No standard messages for un-tethered.	Allows upload of formatted and unformatted documents and hand entry	Web interface
e-Mds	Offers PHR through EHR. Developed and owned by e-Mds	HL7 messages accepted through tethered system with EHR, no standard for un-tethered messages.	Allows for hand entry	VPN connection XML
Chart Logic - it's own portal, + Myhelo	Offers PHR through EHR. Myhelo is developed and owned by Chart Logic	HL7 messages accepted through the tethered system with EHR, un-tethered cannot.	Allows for hand entry and upload of PDFs	Web interface

Table 7: Categories and associated attributes of PHRs

General

1. Name of PHR
2. State
3. Organized by Individual (i.e. not all beneficiaries)

Accessibility

4. Free
5. Web-Based
6. Software-Based
7. Phone App
8. Secure Login
9. Accessible by scanning a QR code
10. Live Support Person
11. Access Log/Audit Trail
12. Other Languages

Import and editing capabilities

13. Data is auto-populated by an entity
14. Links with EHR
15. Can Import Data from other Sources
16. Data can be entered by user
17. Entity-entered data can be removed by user

Export and data sharing

18. Share PHR with Others
19. Download/Print
20. Create Emergency Card

Types of data available

21. Medical Images
22. Claims Data

23. Laboratory Data
24. HIE Consent
25. Advance Directives
26. POLST (view completed form)

Provider Contact
27. Reminders for Scheduled Appointments
28. View Appointments
29. Schedule Appointments
30. Cancel Appointments
31. Request Prescription Refills from Pharmacy
32. Secure messaging

Health Tracking & Improvement
33. Reminders for Preventive Services
34. Graphical Displays of Clinical Info
35. Track Health Behaviors/ Symptoms
36. Connect to Health Tracking Device
37. Health Assessment Tool
38. Resources
39. Health Communities
40. Rewards Program

Healthcare Costs
41. Track Healthcare Expenses
42. Insurance Coverage Info
43. Care Cost Estimator

9. APPENDIX B

See attached Excel file for Appendix B.