West Virginia
Health Information
Technology Infrastructure

Broadband Availability for Health Care
Programs in West Virginia

October 2011

Broadband Infrastructure for Health Care Programs in West Virginia Existing Requirements, Capabilities and Unmet Demand

With the passage of key federal legislation in recent years, the use of health information technology (HIT) to improve the cost and quality of health care has become the predominant focus for health care delivery in the United States. Through the use of electronic health records and other HIT initiatives, new methods and models for delivering and enhancing the quality of care and for measuring the outcomes of that care are at the forefront for improving the health care delivery system.[1]

Broadband availability has become the single most important requirement for change in West Virginia's health care system. It is the conduit for enhanced and timely communications between doctors, doctors and patients, doctors and pharmacists and other health care providers. It facilitates the provision of medical care to unserved and underserved populations through remote diagnosis, treatment, monitoring, and consultations with specialists through telemedicine.[2] Rather than delaying treatment because services are not available, broadband is the means for providing health care interventions and treatments timely in areas lacking advanced diagnostic capabilities and specialty services.

Broadband and the use of HIT is transforming health care by:

- leveling the playing field between urban and rural medical capabilities;
- reducing health care costs by enabling the widespread use of electronic health records;
- facilitating timely diagnoses and treatments;
- leveraging global resources to find efficiencies; and
- empowering individuals to manage personal health decisions.[3]

In order to implement HIT changes, providers must have broadband availability necessary to implement or enhance their technology resources to meet the expectations, not only at the local level, but nationally as well. Generally, broadband enables hospitals, providers and clinics to ultimately improve the care provided, while decreasing associated costs.

Background and History of the Digital Transformation

In 2008, the West Virginia Legislature passed HB 4637 requiring the West Virginia Health Care Authority (WVHCA) to develop a written report for the Broadband Deployment Council detailing existing broadband capabilities and unmet demand for West Virginia's health care system as follows:

> *The Chair of the West Virginia Health Care Authority shall submit a written report to the council by the thirty-first day of October of each year describing in detail the existing broadband infrastructure owned, leased, used, operated or purchased by all hospitals, medical facilities, clinics or healthcare providers; all programs initiatives, or applications utilizing broadband that are promoted by hospitals, medical facilities, clinics, or healthcare providers; and any unmet demand for broadband by hospitals, medical facilities, clinics, or healthcare providers. W. Va. Code §31-15c-11(f).[4]*

Broadband allows users to access information via the Internet at significantly higher speeds than those available through "dial-up" Internet, and facilitates delivery of health care services over long distances. Broadband speeds may vary significantly depending on the particular type and level of service, and may range from as low as 200 kilobits per second (kbps) to six megabits per second (Mbps); some recent offerings include 50 to 100 Mbps.[5] The availability and speed of communications is essential for the digital transformation of health care delivery.

In 2008, KRM Associates, Inc. of Shepherdstown, West Virginia, conducted a large survey of hospitals, clinics and physicians, which gathered data on broadband connectivity and availability, Internet connectivity, existing computer resources, electronic medical record (EMR) system availability and other key health information applications.

Although the surveys were designed to take as little time as possible to complete, the response rate was very low. Highlights of the survey follow:

- 31 of 49 hospitals were connected with broadband through T-1/T-3 and cable telecommunications lines.
- Nearly all of the community clinics, county health departments, and physician offices that responded to the survey had some form of high speed (broadband) telecommunications connection to the Internet, i.e., T-1/T-3 or DSL/Cable Modem.
- EMRs were being widely deployed in 79% of the hospitals; 52% of responding clinics and county health departments had implemented or begun implementation of EMR systems. The cost of implementing was cited as the key factor for not implementing.
- The most utilized clinical telehealth application in the state was teleradiology; an even lower percentage of clinics and physician offices were using, or had an interest in clinical telehealth solutions.[4]

Since the survey was completed in 2008, the requirements for the health care delivery system have dramatically changed. Federal programs are mandated to incentivize hospitals and providers to implement and utilize health information technology quickly as a means for delivering, measuring and improving health care. In addition, West Virginia has been granted millions of dollars in funding to expand broadband around the state. Combining the access to broadband with the numerous incentives being offered, providers are embracing new requirements to improve health care quality and cost through health information technologies, including electronic health records.

Federal Changes Affecting the Current Environment

Congressional actions over the years have dove-tailed nicely to shape the digital transformation of the health care delivery system. Although many West Virginia providers were moving in the direction of HIT implementation to improve the quality of care at the time of the 2008 survey, several Federal Acts have been passed in recent years precipitating rapid growth.

Medicare Modernization Act (MMA) of 2003

Although the inclusion of electronic prescribing in the Medicare Modernization Act (MMA) of 2003 gave momentum for medications to be prescribed electronically, it wasn't until July 2006 that providers began to view e-prescribing differently. E-prescribing, a prescriber's ability to electronically send an accurate,

error-free and understandable prescription directly to a pharmacy from the point-of-care, received widespread publicity when the Institute of Medicine reported that e-prescribing reduced medication errors. Providers quickly recognized that e-prescribing was an important element in improving the quality of patient care.[6]

Medicare Improvements for Patients and Providers Act of 2008 (MIPPA)

As momentum built over the years, the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) was passed, which authorized a new and separate incentive program for eligible professionals who successfully prescribed electronically.[7] Beginning on January 1, 2009, the Secretary of the Department of Health and Human Services was authorized to provide an incentive payment to eligible professionals equal to 2.0% of the total estimated allowed charges for years 2009 and 2010; for 2011 and 2012, eligible professionals could qualify to earn an incentive payment equal to 1.0% of the total estimated allowed charges submitted; in 2013, the incentive payment amount will be reduced to 0.5%.[8]

Also beginning in 2012, eligible professionals who are not successful e-prescribers will be penalized and subject to a payment adjustment. Specifically, if an eligible professional is not a successful electronic prescriber, the fee schedule will be reduced by 1.0% in 2012, 1.5% in 2013, and 2.0% in 2014.[8]

Adopting the standards to facilitate e-prescribing was a key factor in the U.S. Government's plan to expedite the adoption of electronic medical records and build a national electronic health information infrastructure. The improvements made in patient safety combined with the incentives offered to prescribers not only increased the use of e-prescribing, but it became the impetus for providers to begin exploring and using other available technologies to improve the health of their patients.[6]

The American Recovery and Reinvestment Act (ARRA)

In 2009, The American Recovery and Reinvestment Act (ARRA), a multi-billion dollar federal stimulus package, was passed and became the driving force in the changes related to the use of HIT in the health care system. One of the major provisions of the ARRA aimed to improve health care quality by investing in electronic health records (EHR).

In order to achieve this goal, the ARRA provided substantial financial incentives for eligible professionals and hospitals to purchase, adopt, implement, upgrade or demonstrate meaningful use of certified EHR technology.[9,10] Not only would an additional 10% increase on the incentive payments apply for physicians in rural health professional shortage areas, but physicians who implement EHRs have an opportunity to receive up to $44,000 in Medicare payments or $63,750 in Medicaid payments. However, fee schedules will be reduced by 1% in 2015 for those who have not implemented EHRs, and 3% by 2017.[9]

The Health Information Technology for Economic and Clinical Health (HITECH) Act

Enacted as part of the American Recovery and Reinvestment Act of 2009, The Health Information Technology for Economic and Clinical Health (HITECH) Act, was signed into law.[11] This Act promoted the adoption of HIT and became the regulatory measure introduced in anticipation of the sudden rise in the volume of healthcare practices adopting EHRs due to the lucrative financial incentives being offered.[12]

In order to assist providers with the monumental task of implementing EHRs, regional health information technology extension centers (RECs) were mandated in the HITECH Act under the U.S. DHHS' Office of the National Coordinator for Health Information Technology (ONC). In West Virginia, The West Virginia Health Improvement Institute, one of 69 non-profit organizations across the nation, was awarded ARRA (federal) dollars to support the development of the West Virginia Regional Health Information Technology Extension Center (WVRHITEC). The purpose of the WVRHITEC is to aid health centers and medical professionals as they work to implement and use certified HIT to achieve health improvement outcomes, and to offer education, outreach, guidance and technical support to all health care providers in West Virginia who have previously adopted, or have yet to adopt electronic health record systems.[13,15]

"HITECH facilitates the expansion of HIPAA Act EMR standards that aid in electronic exchange of health information on a national basis to make medical care more organized and transparent." [14]

As a result of HITECH, EHRs should result in health care that is patient centered, evidence-based, prevention-oriented, efficient, and equitable. To achieve the new federal standards, commonly known as *meaningful use,* a certified EHR system must:

- capture and store health information in a digital manner;
- use information to track key clinical conditions;
- share information for improved care coordination; and
- initiate reporting of clinical quality measures and public health information.[16]

Although criteria for *meaningful use* will be updated through future rulemaking, early definitions of meaningful use progression suggest that EHR software will need to be equipped for information exchange to improve the quality of care and facilitate reporting on clinical quality measures. Future stages of *meaningful use* will focus on continuous quality improvement at the point of care, safety and efficiency leading to improved health outcomes, a focus on decision support for national high priority conditions, patient access to self management tools, access to comprehensive patient data through robust, patient-centered health information exchange and improved population health.[17]

The Patient Protections and Affordable Care Act of 2010 (PPACA)

The most recent federal congressional action to be signed that facilitates the use of HIT in the health care system is the Patient Protection and Affordable Care Act of 2010 (PPACA). One of the most significant HIT/EHR-related provisions in the PPACA requires the Department of Health and Human Services' Secretary to integrate the EHR *meaningful use* incentives established by the HITECH Act and the respective reporting mechanisms of the Physician Quality Reporting Initiative (PQRI), an incentive program for eligible professionals who satisfactorily report data on quality measures for covered professional services furnished to Medicare beneficiaries as required by the 2006 Tax Relief and Health Care Act.[18] The integration shall consist of the selection of measures, including those measuring quality of care, and EHR reporting that demonstrates *meaningful use*.[1] In the future the data submitted from each provider will measure health care improvement and compare each provider's success on a publicly available website.

When PQRI was first established in 2007, the voluntary program provided an incentive payment of 1.5% of a provider's estimated allowable charges under Medicare Part B if the provider reported at least three measures for at least 80 percent of eligible patients. Because the focus is now on cost and quality, PQRI was expanded under PPACA and transformed from providing an incentive payment to those who voluntarily participated, to one that requires doctors to participate and submit data; those who do not participate or meet mandatory requirements will be penalized. The transition began in 2011 when bonus payments for quality reporting were reduced to 1 percent. Further reductions are expected in 2012 through 2014. Beginning in 2015, providers who do not meet reporting requirements will see a 1.5 percent reduction in Medicare reimbursement. The penalty for not reporting will increase to 2 percent in 2016 and beyond.[19]

Through federal legislation, providers are being rewarded for transforming health care delivery; penalties will apply for those who choose not to participate. To this point, the strategy has proven effective for shaping future health care delivery systems.

Current Infrastructure

In an effort to develop the needed telecommunications infrastructure across the state, millions of dollars to deploy and enhance current broadband availability has been allocated to West Virginia through numerous federal grants. Many organizations around the state are focused on this effort. They include the Department of Commerce, the West Virginia Telehealth Alliance (WVTA), the West Virginia Health Information Network (WVHIN), and the West Virginia Regional Health Information Technology Extension Center (WVRHITEC) to name a few. Through these efforts, hospitals, clinics and physician practices will be able to comply with federal requirements to provide and measure health services and share patient health care information with other providers as needed, ultimately improving the quality and cost of health care.

An example of one current project that is working to improve telecommunications is The Federal Communications Commission's Rural Health Care Pilot (RHCPP) program. The RHCPP is a federal initiative administered through the WVTA designed to expand eligible health centers' telehealth/telemedicine capabilities and enhance their capacities for future electronic health information exchange.[15] The program is providing critical funding to support the deployment of broadband networks, and will improve connectivity for rural health centers in regions of the state with historically high concentrations of poor and elderly individuals suffering from chronic medical conditions.[20]

The WVTA will be deploying up to $8.4 million in federal funds for several broadband enhancement projects and upgrades. In addition, the West Virginia Health Care Authority has provided state funding to help cover part of the program's 15% match requirements. As a result, nearly 100 health care locations across West Virginia will receive upgrades and improvements in their broadband connections and capabilities.[15]

The WVTA also received a $200,000 grant from the Claude Worthington Benedum Foundation to fund a telehealth outreach and education project. The project will facilitate the use of telehealth by providing educational and consultative support to providers as they establish telehealth applications or enhancements relevant to their needs and goals.[15]

With the combination of programs that are contributing to the deployment of broadband and the numerous federal incentives being offered, hospitals, providers and clinics are rapidly implementing new technology. In fact, U.S. News & World Report recently reported that WVU Hospital made the list as was one of the 118 "high performing" hospitals that has adapted health information technology.[21]

Without broadband, however, hospitals and providers would not be able to transform; therefore, it is important to review coverage availability and existing need. **Figure 1** shows the availability of broadband for facilities across the state using data from the West Virginia Broadband Mapping Program.[22] The facilities represented in **Figure 1** all play a key role in exchanging health information electronically with physician, health care teams and patients in the future. They include hospitals, ambulatory surgery centers, behavioral health centers, FQHCs, home health agencies, hospice agencies, nursing care facilities, psychiatric residential facilities, rural health clinics, and renal dialysis centers.
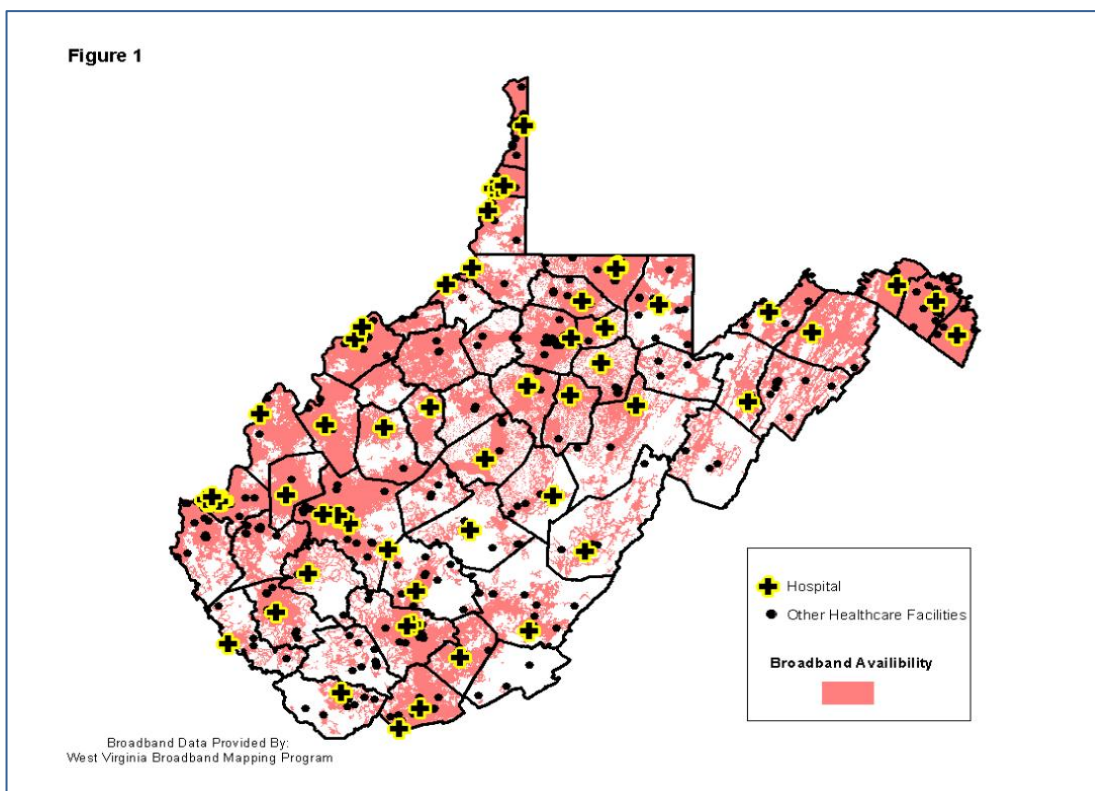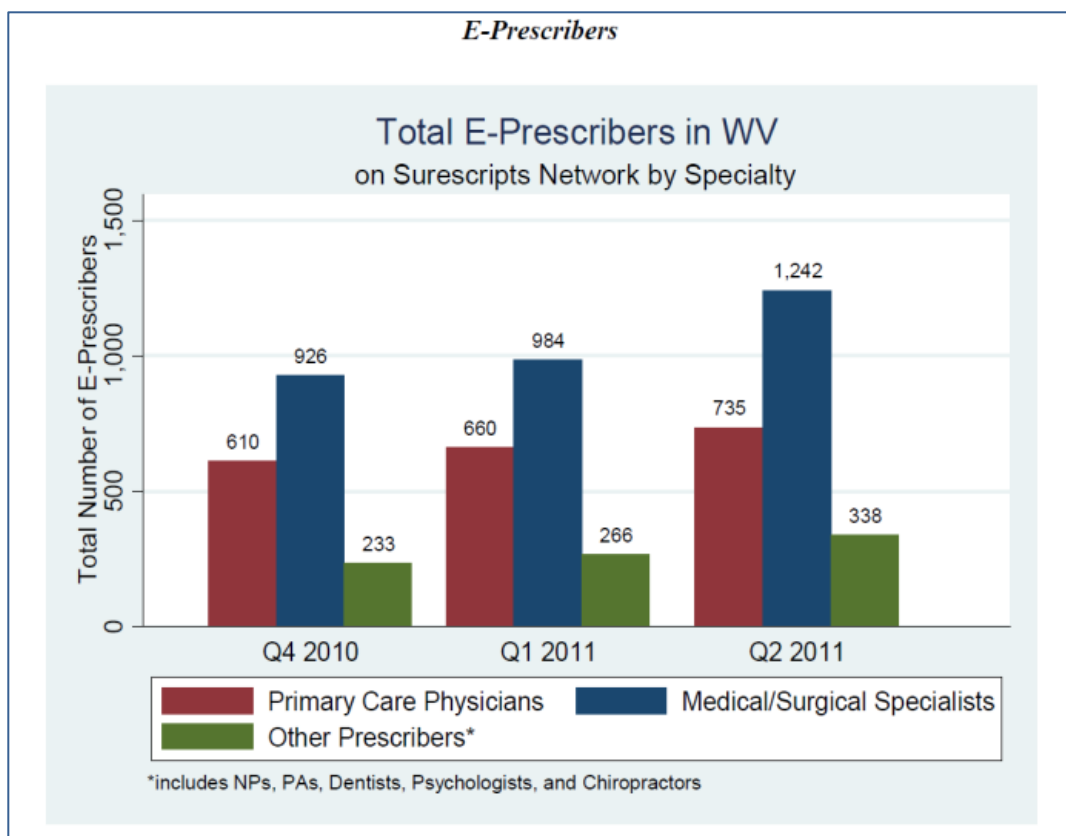

Figure 1

Hospital

● Other Healthcare Facilities

Broadband Availibility

Broadband Data Provided By:
West Virginia Broadband Mapping Program

Figure 1 indicates that nearly all facilities have broadband access, with only a few areas showing limited or no access. According to the National Telecommunications and Information Administration, all West Virginia acute care and critical access hospitals have access to 4 Mbps (megabits per second) or greater,[23] which constitutes the necessary Mbps for high speed communications (broadband);[24] most have greater than 10Mbps, while some have up to 100 Mbps available.[23] The availability of broadband has greatly improved since 2008, when it was reported that 35% of hospitals may not have had connectivity, or may have had connectivity less than high-speed.[4]

Although not addressed in the 2008 survey and not shown in **Figure 1,** pharmacies are an important component of the health care system. Fortunately, 92% of all pharmacies in West Virginia are now able to receive prescriptions electronically, according to information provided to the Governor's Office of

Health Enhancement & Lifestyle Planning by the West Virginia Board of Pharmacy. Clearly, pharmacies have met the demand as providers capitalize on the e-prescribing incentives being offered.

West Virginia Medicaid has also contributed to the success of the e-prescribing program by distributing free e-prescribing software to any Medicaid provider meeting the requirements for the Medicare incentive programs, allowing electronic prescribing between clinicians and dispensing pharmacies. According to the Office of National Coordinator for Health Information Technology in a letter to the State HIT Coordinator, there are 2315 e-prescribers in West Virginia as of May 2011.[25] Many are using stand alone e-prescribing software, while others are e-prescribing through an EHR. **Figure 2** shows total e-prescribers by specialty.[25]

Figure 2

Although much has been accomplished in the last 3-4 years, there are still areas of the state where broadband is limited or not available. Using the West Virginia Broadband Mapping Program,[22] **Figure 3** shows the areas where demand still exists, most notably in the southern part of the state as well as the eastern counties that border Virginia.
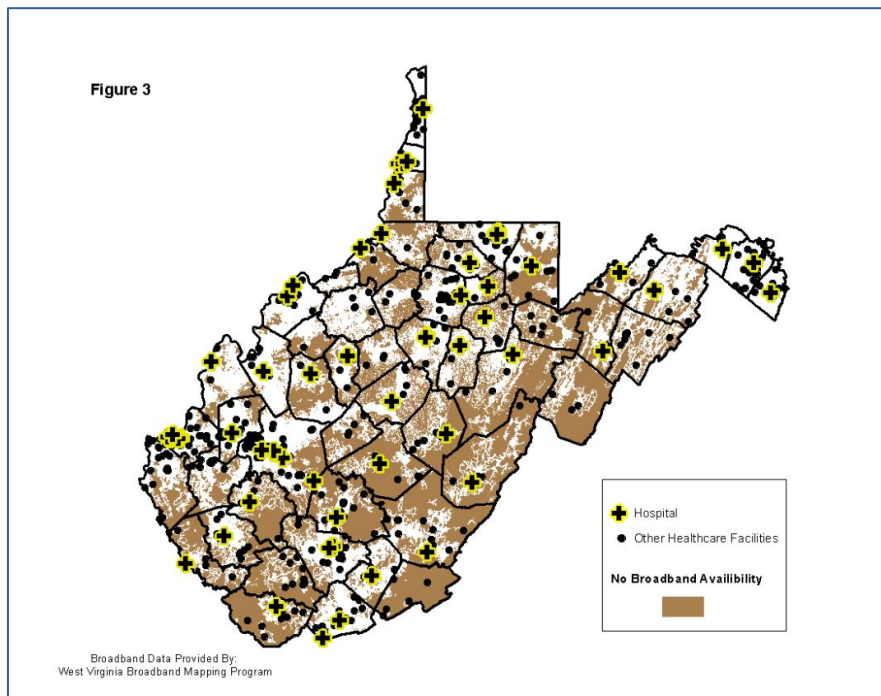
Figure 3

Since many of the federal programs are incentivizing physician practices to implement HIT, **Figure 4** depicts the location of physicians who are licensed and have a business mailing address in the state according to the West Virginia Board of Medicine. Most physicians are located in areas where broadband is available.

Figure 4
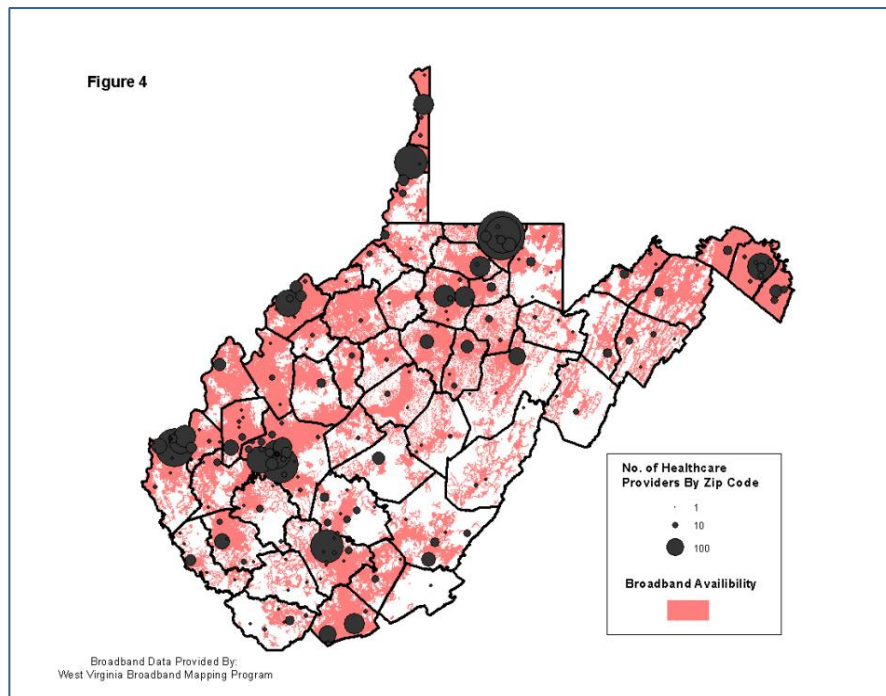
Given the combination of broadband availability and federal incentive programs, the number of physicians with EHRs is rapidly increasing. Compared to the 2008 survey where only 15 physicians reported using an EHR and 33 physicians reported sending medical record information via mail,[4] nearly

700 providers have joined the WVRHITEC to receive assistance/services as they implement an EHR, or are working toward qualifying to receive federal Medicare-Medicaid incentive payments.[13]

The services being provided by the WVRHITEC include assistance in the selection and purchase of an EHR system that meets the federal *meaningful use* criteria.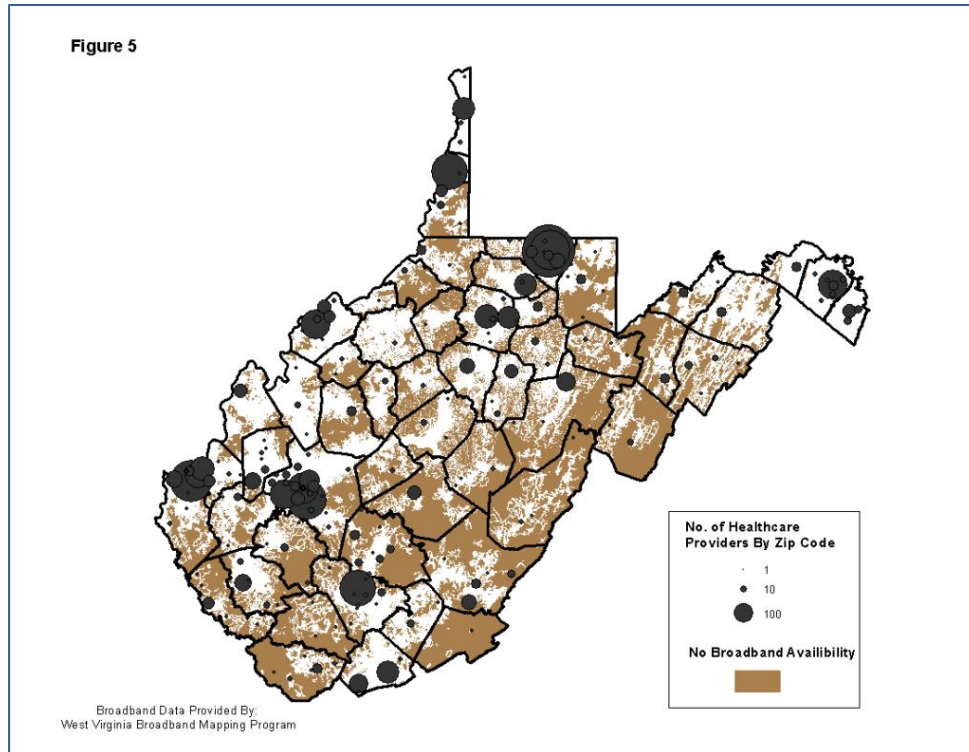 In an effort to streamline the selection, the WVRHITEC has developed an EHR Vendor Recognition Program (VRP) to help connect health care providers with vendors who have met thresholds of clinical functionality and service. To date, several vendors have not only received 5-star recognition, but also meet the ONC's EHR certification requirements. They include Allscripts, athenahealth, eClinicalWorks, e-MDs, GE Healthcare, Greenway Medical Technologies, NextGen Healthcare, Inc. and Sage. Other vendors who meet minimal qualifications may be recognized in the future as well.[26]

EHR vendors being used by clinics who responded to the 2008 survey included CPSI Clinicals, EHS, HealtheWV, Medical Manager, HealthProXL, HealthStat, Mountainside PM, MSI, RPMS or a combination of these.[4] Although the vendors being used in 2008 are not presently vendors who have received a 5-star commendation from the WVRHITEC at this time, providers continue to implement and utilize systems that may receive approval in the future and qualify for the incentive programs.[4]

Regardless of what system is being used, providers *are* taking advantage of early EHR implementation incentives nationally and in West Virginia. A recent report from the Centers for Medicare & Medicaid Services (CMS) notes that $149 million has been paid to providers participating in the Medicare EHR Incentive Program as of July 31, 2011.[27] As of September, 2011, West Virginia Medicaid has issued more than $5.6 million in HIT incentive payments to West Virginia eligible providers.

Although many West Virginia providers are implementing, or moving in the direction of implementing an EHR, providers will not be able to use the full extent of technology without broadband availability. As depicted in **Figure 5**, access to broadband remains limited or not available in some areas of West Virginia. In the case where broadband is not available, hardship can be claimed by the provider; penalties for non-compliance with federal requirements can be avoided while expansion occurs.

> *"Greater use of the electronic health record system will lead to improvements in overall patient care, as well as new, coordinated preventative benefits. It will also help us in terms of better sharing of information and an enhanced ability, over the long term to understand the overall health condition of patients."*
>
> *Dr. Ron Stollings*
> *Internal Medicine,*
> *Madison Medical Group*
> *Chairman, WV Senate's*
> *Committee on Health and*
> *Human Resources*[16]

Figure 5

No. of Healthcare
Providers By Zip Code
· 1
• 10
● 100

No Broadband Availibility

Broadband Data Provided By:
West Virginia Broadband Mapping Program

Specific Uses of Broadband in Health Care

There are many uses of broadband in health care that range from those for patient use, to the most sophisticated uses between doctors, hospitals and the healthcare industry, such as telemedicine and health information exchange; without it, determining the most effective treatments and processes through HIT would not be likely.

Broadband Uses for Patients

Broadband enhances medical care of residents in rural communities. As a result, residents have access to remote specialists through telemedicine that would otherwise be unavailable.[4]

Broadband empowers patients to take a more active role in their health care. As electronic health information exchange becomes the means for how information is shared, more direct communication between patients and providers will become the norm.[12]   In fact, these changes are fast becoming reality. On September 12, 2011, the U.S. Department of Health and Human Services proposed new rules that would expand the rights of patients to access their health information through the use of HIT. Specifically, the new rules would empower patients and allow them to gain access to test results reported directly from labs. At a patient's request, laboratories would be allowed to directly provide test results to the patient or their personal representative.[28]

Broadband Uses for Professionals

Electronic Health Records

Much has been written about how providers are capitalizing on incentives to implement EHRs and e-prescribing. However, there are many benefits to implementing an EHR besides the incentives being offered. EHR provides:

- information the medical team needs to provide the best possible care; providers will know more about their patients and their health history before they walk into the examination room.
- better access to information; EHRs facilitate greater access to the information providers need to diagnose health problems earlier and improve the health outcomes of their patients. Information may be shared more easily among doctors' offices, hospitals, and across health systems, leading to better coordination of care.
- a patient's health information when and where it is needed – too often care has to wait because the chart is in one place and needed in another.
- a complete picture of a patient's health information in one location that supports better health care decisions, and more coordinated care.
- a better mechanism for follow-up information for patients –for example, after a clinical visit or hospital stay, instructions and information for the patient can be effortlessly provided and reminders for other follow-up care can be sent easily or even automatically to the patient.
- improved patient and provider convenience – patients can have their prescriptions ordered and ready even before they leave the provider's office, and insurance claims can be filed immediately from the provider's office.[12]

E-Prescribing

The number of prescriptions is rapidly increasing. Prescriptions are being written by multiple providers, and without some mechanism for coordinating medications, it is ever more likely that duplicate prescriptions will be filled, and drug interactions, over-prescribing, medication abuse or some other problem will occur.

For providers e-prescribing has become the means for managing a patient's medications to avoid common errors. In fact, researchers have found that error rates have been reduced nearly sevenfold when providers changed from a paper-based prescription to e-prescribing. Errors were reduced from 42.5 to 6.6 per 100 prescriptions by the end of the first year.[29]

In addition, e-prescribing provides clinical decision support for the provider including patient medication history, allergy information, drug interaction alerts, formulary, and benefits eligibility information,[30] eliminating many of the issues we have seen in the past.

Telehealth and Hospitals

Telehealth supports clinical health care over long-distances and those in unserved or underserved areas, provides patient and professional health-related education, public health and health administration.[31]

Clinical uses of telehealth technologies may include, but are not limited to:

- Transmission of medical images for diagnosis and trauma
- Groups or individuals exchanging health services or education live via videoconference
- Transmission of medical data for diagnosis or disease management
- Advice on prevention of diseases, patient monitoring and follow-up
- Health advice via telephone in emergent.[32]

One example of a successful telehealth program in West Virginia is the West Virginia Perinatal Telehealth Program. In early 2010, the West Virginia Perinatal Telehealth Program received federal grant money to help provide equipment and training on the use of interactive video and audio teleconferencing. This program connects physicians at 15 rural health facilities with specialists at CAMC's Women and Children's Hospital, Cabell-Huntington Hospital and WVU Children's Hospital, allowing physicians to see patients and sonograms in real time.[33]

Health Information Exchange

The next phase in the clinical data lifecycle, and already identified as a requirement for *meaningful use* in the future, is the ability to share patient clinical data through health information exchange (HIE). HIEs are networks that allow health care organizations to share information within communities. Currently, a clinical summary of the patient's problems, medications, allergies, recent labs, and other relevant information can be stored within the HIE, and health care providers who have been granted permission may access it.[34]

Currently, the West Virginia Health Information Network (WVHIN), an HIE, is being developed. In the future, the WVHIN will assist providers who use an EHR to send and receive a patient's health information in a matter of minutes over a secure Internet connection. The exchange of information promotes better coordination between health care providers and allows care to be delivered that is a timely, efficient, effective and patient-centered.[35]

Conclusion

Health information technology is rapidly transforming the health care delivery system, not only in West Virginia, but nationally as well. Numerous incentives are being offered to providers for technology implementation. HIT has become the emphasis for improving the quality of care while reducing costs.

Broadband deployment and infrastructure investment over the years has vastly improved West Virginia's ability to transform and meet the federal requirements to increase the use of EHRs and other forms of health information technology that not only reduce costs over the long term, but also make quality reporting easier. However, healthcare organizations considering investments in HIT must consider, not only the availability of broadband, but the HIT solution that will affect the many ways health care is delivered now, and how the digital transformation may affect it in the future.

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