

The Kentucky e-Health Action Plan

Recommendations for Developing the Kentucky e-Health Network

Presented to the Kentucky e-Health Network Board
by the e-Health Advisory Group



Cabinet for Health and Family Services

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April 2007

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I. The e-Health Action Plan at a Glance

e-Health in Kentucky – Background and Overview

Kentucky spends more than 16 percent of its gross state product in the health sector – both health care and public health (Kaiser Family Foundation, 2007). The health sector is the only industry of its size still dominated by paper-based, labor intensive processes.

To improve quality and efficiency, most industries have turned to information technology. The need for the health sector to move to electronic information systems has been well established over the past decade. Study after study has demonstrated that, in spite of ever rising health care costs, inconsistent quality of care and poor health outcomes still plague health care. Forces especially relevant to Kentucky include the need for affordable health care, variable quality and safety, unfavorable health outcomes in the state, and opportunities for economic development.

While the need for e-Health is great, the obstacles so far have been even greater and require leadership and carefully planned and funded execution. Yet, a number of forces are converging in the health sector and driving it toward greater use of information technology.

In 2005, the Kentucky General Assembly and Governor Fletcher's Administration worked together to pass legislation, known as Senate Bill 2, which called for the creation of a secure, interoperable statewide electronic health network. On March 8, 2005, Governor Fletcher signed SB2 into law.

The passage of SB2 in 2005 ignited interest and established the structures for furthering e-Health. This legislation created the Kentucky e-Health Network (KeHN) Board to oversee e-Health efforts in the state. It also established the Health care Infrastructure Authority, a partnership of Kentucky's two major research universities – the University of Kentucky (UK) and the University of Louisville (U of L) – to provide leadership for the Board. The Cabinet for Health and Family Services, at the urging of Governor Fletcher, took a leading role in fostering e-Health in the state by providing staff support to the Board and working with the Board leadership from UK and U of L.

Kentucky's e-Health efforts face a challenging environment, including low levels of investment in e-Health and few health care markets large enough to sustain local e-Health collaborations on their own. After completing an initial assessment and administrative organization early in 2005, the KeHN Board initiated several critical breakthrough initiatives in 2006, including seating an Advisory Group of technical and clinical experts to assist with developing a plan for a statewide e-Health Network in the Commonwealth of Kentucky. The advisory group was the forum for representatives from the four stakeholder quadrants and Kentucky's local e-Health efforts to develop a consensus document on the model and steps needed to develop a statewide e-Health Network and accomplish the mission and vision of the KeHN Board. This e-Health Action Plan

is the result of more than nine months of discussion between the Board, the Advisory Group and a broad group of stakeholder organizations on the direction and actions needed to advance e-Health in Kentucky.

Objectives and Action Items - Summary of Recommendations

One of the most important tasks for any e-Health movement is to advance a common vision and strategy for achieving a desired future. The KeHN Board has formulated its mission and vision (see page 18) for e-Health in Kentucky based on the authority given to it through Senate Bill 2. The following objectives and action items are recommendations for how to make the mission and vision of Senate Bill 2 and the Kentucky e-Health Network Board a reality.

Each of the principles, objectives and action items contained in this Action Plan cannot be viewed as a wholly independent activity. Every objective and action item is interconnected to the other action items in the plan. For example, Kentucky needs to increase use of health information technology but it also needs to enable health information exchange. Also, it is not enough for action to occur at the state level. Kentucky also needs to be connected to the national level e-Health efforts as well as local e-Health initiatives. Moreover, this e-Health Action Plan is not intended to just direct state government efforts but is intended to catalyze private sector efforts as well. A coordinated strategy will help ensure that Kentuckians - no matter where they are - can have their health information available electronically for the clinicians treating them.

In the same way that our transportation system involves both the public and private sectors and local, state and national level efforts, so too e-Health is a multifaceted effort with roles and responsibilities for each sector and level of our society. This plan naturally focuses most directly on the KeHN Board and its activities, but the goal of Kentucky's e-Health efforts is to guide and coordinate activity among every stakeholder group and every quadrant of the health sector in Kentucky.

To assist with its mission and work, in addition to the e-Health Advisory Group, the Board has recently appointed the following committees and work groups:

- Health Information Exchange (HIE) Committee
- Privacy and Security Committee
- Health Information Technology (HIT) Adoption Committee
- Economic Development Ad Hoc Working Group
- Kentucky Health Information Partnership Stakeholder Work Group.

The table below summarizes the list of recommended objectives and action items. Some items already have funding secured and have begun implementation. Other items are important but lack the funding necessary to accomplish them at this time. Those items that have funding currently and are planned to be undertaken or accomplished in 2007 are listed in bold below. Where possible, each action item has been assigned to a committee or work group for oversight and implementation.

SUMMARY TABLE OF OBJECTIVES AND ACTION ITEMS

Description of Objective & Action Items	Implementation Responsibility	Funding Available for 2007
Objective #1: Foster Improvement in Quality of Care and Health Outcomes while Containing Health Care Costs		
Convene an annual Kentucky e-Health Summit	KeHN Board	✓
Integrate Health IT Efforts with Quality Improvement Efforts	HIT Adoption Committee	
Pursue Common Chronic Care and Disease Management Tools	HIT Adoption Committee	
Integrate Population/Public Health Goals into e-Health Efforts	KeHN Board	
Objective #2: Facilitate Statewide Health Information Exchange		
Develop and Implement the Kentucky Health Information Partnership (KHIP)	CHFS, KeHN Board, KHIP Stakeholder Work Group	✓
Conduct Statewide e-Health Inventory, Needs Assessment and Medical Trading Area (MTA) analysis	HIT & HIE Committees	✓
Develop a Common HIE Infrastructure Necessary for the Statewide Kentucky e-Health Network	Advisory Group, HIE Committee	
Objective #3: Foster Consumer Empowerment Through HIT & HIE		
Catalyze Consumer Support for e-Health	KeHN Board, CHFS	
Address e-Health Privacy and Security Concerns	Privacy and Security Committee	
Assist Consumers/Patients to Locate Providers that Use or Accept EHRs/PHRs and Build Capacity for PHR Development and Use	HIT Adoption Committee	
Objective #4: Foster Increased Use of Health Information Technology		
Incentivize, Reward and Facilitate HIT Adoption	HIT Adoption Committee	✓ (some)
Implement Pilot Projects and Grants Programs to Assist with HIT Adoption	HIT Adoption Committee	✓ (some)
Develop e-Health Resources to Assist Health IT Adoption	HIT Adoption Committee	✓ (some)
Objective #5: Facilitate and Collaborate with Local HIE Efforts		
Assist with Local HIE Development	HIE Committee	
Share the Statewide HIE Infrastructure and Resources with Local HIEs	Advisory Group, HIE Committee	
Objective #6: Collaborate With Federal and Interstate e-Health Efforts		

Implement Findings and Recommendations from the Kentucky e-Health Privacy and Security Collaboration	Privacy and Security Committee	✓
Integrate Federal Health IT Standards and Certification into State and Local e-Health Efforts	Advisory Group, HIE Committee	
Pursue Collaborative Opportunities with National/Federal Efforts for Kentucky e-Health Projects and Initiatives	HIE Committee	
Objective #7: Link e-Health with Economic Development Efforts		
Develop Linkages to Existing Technology Adoption Efforts Within Kentucky	Economic Development Committee	
Ensure Appropriate e-Health Grant Funds Come to Kentucky	KeHN Board, CHFS	✓
Foster Development of e-Health businesses in Kentucky	Economic Development Committee	

II. Health Care in Kentucky – An Overview

Profile of Kentucky

Kentucky is a state of contrasts and connections. Located in the south central United States, Kentucky cannot be described as Midwestern, Eastern, or Southern, but is a unique blend of all three. The 15th state to enter the Union, seven other states border Kentucky and demonstrate the diversity of its geography, history, and culture. Along Kentucky's Eastern border is West Virginia and Virginia and the Appalachian Mountain region. To the North runs the Ohio River, separating Kentucky from its Midwestern neighbors - Illinois, Indiana, and Ohio. Tennessee borders Kentucky to the south, and Missouri adjoins the extreme western edge of the state across the Mississippi River. With this tremendously diverse geography - from Appalachian Mountains across the Bluegrass Region to the Mississippi River area - Kentucky consists of a mix of rural and urban populations. This diversity is also a part of Kentucky's economy, with leading centers in horse farming, manufacturing, transportation logistics, health care, and technology.

Kentucky's health care markets reflect the contrasts and connections of Kentucky's geography. Kentucky's population of 4.1 million is dispersed across many different health care markets. Louisville is the state's largest metropolitan center with a population of nearly 700,000, followed by Lexington with a population of 268,080 and the Northern Kentucky suburbs around Cincinnati are also part of a larger urban area. The remainder of the population is dispersed across a number of mid-sized cities and smaller towns with Kentucky having a much higher rural to urban population than the rest of the United States (U.S. Census Bureau, 2007). Kentucky also has a high number of border cities with populations that cross state boundaries such as Louisville, Owensboro, and Northern Kentucky among others.

Although Kentucky has made great strides in creating jobs and opportunities, raising educational achievement, and improving health in recent years, Kentucky still faces a number of challenges to improving the health and quality of life of its citizens. These challenges, such as rising health care costs, variable health care quality and safety, poor health outcomes, and the need for economic advancement across the state argue for a greater e-Health role in transforming health care, personal health, and the economic outlook for Kentucky.

What is e-Health?

e-Health is a broad term that encompasses any effort to use information technology in the areas of health and health care. Notable examples of e-Health include a consumer using the Internet to locate health information, a clinician using an electronic medical record in a health care setting, or two health care entities exchanging health information using a secure Web site or network. E-Health specifically encompasses two major concepts: health information technology (HIT) and health information exchange (HIE). Health IT refers to the adoption and use of information technology in a health setting. Health information exchange involves transferring electronic health information from one entity to another, usually the ability to transfer a person's medical record electronically from one place to another securely. Another example of health information exchange is the ability to send X-rays, lab results and other information electronically rather than in paper form. HIE has great potential to rid the system of costly inefficiencies and ensure doctors have the right information at the point of care.

e-Health Statement of Need

The American health care system lags behind nearly every other sector of the national economy in its adoption of information technology. In an era characterized by instantaneous mobile communications, unprecedented access to information through the Internet, and a booming virtual marketplace, most American clinicians still rely on handwritten notes, paper prescriptions, and incomplete patient histories stored in file cabinets. Even though patients and physicians benefit from extremely sophisticated diagnostic technology, the relatively basic information technology necessary to store and share critical health information electronically remains largely unavailable.

Health care is the only industry of its size still characterized by repeated and costly phone calls, faxes, mailings, and multiple, non-standardized electronic log-ins and access points. All of this administrative work involves a great deal of costly staff time and does not relate directly to patient care or improve the patient experience. The need for the health care industry to move to electronic systems has been well established in the past decade. Most recently, the mass evacuations necessitated for Hurricane Katrina “have powerfully demonstrated the need for electronic health records that follow patients even if their doctor’s office no longer exist so a disaster doesn’t mean restarting care from scratch.”¹ Clearly the need is great, but the obstacles yet to be overcome are even greater and require leadership and carefully planned and funded execution.

A number of forces are converging in the health sector and driving it toward greater use of information technology. Forces especially relevant to Kentucky include rising health care costs, variable quality and safety, unfavorable health outcomes, and opportunities for economic development. Each of these issues is discussed briefly in the sections that follow.

Force #1: Rising Health Care Costs

Since 2001, national health spending has considerably outpaced the growth in the gross domestic product (GDP). In 2005, health spending grew for the sixth straight year by 6.9 percent. The United States now spends approximately \$2 Trillion on health care, roughly 16% of GDP (Catlin et al., 2007). If this growth continues, by 2014 the estimated health care spending estimate of GDP may reach nearly 20 percent (Heffler et al., 2005).

As health spending has grown so has the cost of most families’ and employers’ health insurance. Employer health insurance premiums increased by 9.2 percent in 2005 and 7.7 percent in 2006, making the annual premium for a family of four average more than \$11,000 (Claxton et al., 2005). According to the U.S. Census Bureau, Kentucky is 43rd in per capita income and has the 8th highest number of people below poverty level. On average, Kentucky families earn roughly \$8,300 a year less than the national median income (U.S. Census Bureau, 2007). Therefore, any health insurance cost increases hit Kentucky families particularly hard.

¹ Neergaard, Lauran, Associated Press, *Lexington Herald-Leader*, Tuesday, September 13, 2005.

Cost increases of this magnitude might be acceptable if we knew as a nation that this investment was paying dividends in better health outcomes, longer life expectancies and lower mortality rates. But while the U.S. leads the world in health spending, it ranks 37th in overall health care performance and 22nd in life expectancy compared to other industrialized countries (World Health Organization [WHO], 2007).

The high cost of health care also affects access to coverage and other important policy areas. In the last five years, high health care costs have pushed up the number of uninsured in Kentucky and around the nation, which in turn has increased Medicaid costs annually by approximately 7.4% to \$270.9 billion in 2004 (Holahan & Cohen, 2006). As states have struggled with these skyrocketing Medicaid costs, budgets for other essential areas such as education, transportation, and public safety are affected

Force #2: Variable Health Care Quality and Safety

As health care costs have risen dramatically, health care results have not improved. In fact, some indications suggest health care quality may be declining relative to other industrialized nations. As medical care has become more complex, outdated paper-based systems have become impediments to quality care.

Recent studies of problems in the health care industry provide the following evidence:

- 40% of outpatient prescriptions are unnecessary (Middleton, 2005).
- 20% of lab & x-ray tests ordered because originals cannot be found (Middleton, 2005).
- 18% medical errors from inadequate patient information (Middleton, 2005).
- Patients receive only about 54.9% of recommended care (Middleton, 2005).
- Only 49% of notifiable diseases get reported to the Centers for Disease Prevention and Control (CDC) (Middleton, 2005).
- Medical errors account for an estimated 48,000 -98,000 deaths per year (Institute of Medicine (IOM), 2000).
- 1 in 7 hospitalizations are due to missing outpatient care information (Yasnoff, 2004).
- The treating physician does not know 25% of prescriptions taken by a patient (Middleton, 2005).
- Medicare beneficiaries see on the average 6.4 different providers per year (Middleton, 2005).
- Care for chronic illness accounts for 78% of all health care costs, and much of this due to preventable complications (Medical Expenditure Panel Survey, 2000).

Health care is the only industry of its size that operates like a cottage industry, using a paper-based information infrastructure that is inefficient and poorly integrated. Fewer than 25 percent of physicians currently use Electronic Health Records (EHRs), and 90 percent of the more than 30 billion health care transactions per year are conducted by mail, fax, and phone.

Administrative inefficiencies and inconsistent quality of care are estimated to account for as much as one third of the nearly \$2 trillion dollar cost of health care in the U.S.

The high cost of health care might be acceptable if spending was consistently demonstrated as necessary for high quality care. But, as mounting research evidence indicates, the U.S. health care system does not consistently deliver high quality care.

Force #3: Poor Health Care Outcomes

There is so much to be proud of in Kentucky, but one reality is clear though difficult to acknowledge. Kentucky is a relatively unhealthy state. Like many of its southern neighbors, Kentucky struggles with poor health outcomes.

For example, public health data demonstrates that Kentucky:

- Has the highest prevalence of smoking in the nation (CDC, 2006a).
- Has 2nd highest disability rate in the nation, with one in four Kentuckians having a health or health-related disability (CDC, 2005a).
- Has 8th highest mortality rate in the nation (CDC, 2006b).
- Has 2nd highest number of deaths due to cancer (CDC, 2002).
- Has the 6th highest number of deaths due to diabetes (CDC, 2006c).
- Has the 6th highest number of deaths due to heart disease (CDC 2006c).
- Has the 3rd highest number of people who are overweight or obese (CDC 2005b) and has the 4th lowest number of adults who participate in regular physical activity (CDC 2005c).

The association between poor health outcomes and higher than average health care costs is demonstrated by the fact that Kentucky ranks 5th highest in the percent of its gross state product devoted to health spending (16.9 percent) (CMS, 2007).

While poor health outcomes are closely linked to poverty and socioeconomic status as well as to lifestyle and diet, the public health and medical care systems also play a role by helping to ensure early detection and appropriate treatment. Moreover, the U.S. population is not experiencing commensurate improvements in health measures like longevity and incidents of disease when compared with populations of other developed countries. For example, the United Kingdom and Canada spend considerably less than what the U.S. spends on health care (approximately 8 – 10 percent respectively of their gross domestic product versus more than 16 percent in the U.S) yet these countries achieve better health outcomes for their populations (OECD Observer, 2007).

Improved information technology can also assist with improving health outcomes. Public opinion polls indicate that Americans leading source of health information are their family doctors and the internet (Cisco, 2007). Putting more and better health information in the hands of Kentuckians and their providers can ensure that people can make healthier choices, detect diseases earlier, receive high quality care, and improve their health and well-being.

Force #4: Economic Competition and Global Transformation

Health care costs, safety and quality of care, and poor health care outcomes are not only policy issues but are business issues, economic competitiveness issues, and most of all quality of life

issues for the citizens of our country and our state. Kentucky needs to galvanize and coordinate its state e-Health efforts not just as a strategy for improving health care and health outcomes but also for the benefit of Kentucky's economic outlook.

Health care costs and poor health outcomes hurt our economic competitiveness as a state and a nation. U.S. carmakers spend more on health care than steel (Schaeffer, 2005), and Starbucks spends more on health care for employees than coffee for its customers (Anonymous. 2004). On average every car made in America costs \$1,500 more due to health care costs (Schaeffer, 2005). High health care costs, ultimately passed on to consumers and payors, result in higher premiums and prices of products and services (Lagoe et al., 2005).

High health care costs and the health status of the population can also affect Kentucky's ability to attract business investment. Kentucky is no longer competing only against other states for jobs and business investment, but also Canada, Mexico, China, India, and Eastern Europe.

Particularly, to attract new knowledge-based economic opportunities, Kentucky must critically examine barriers that inhibit its ability to compete in the global marketplace.

Addressing Kentucky's Health Challenges

Kentucky's combined problem of limited resources and a high level of health need means that a multifaceted and strategic approach to addressing these challenges is absolutely critical to make health care more affordable and to improve the health and quality of life for Kentucky families.

In surveying the policy options available to address the multiple challenges of high cost, poor health outcomes, variable health care quality, and resource constraints, Kentucky has sought to use a variety of approaches including:

- A revitalized Medicaid program and an extensive network of safety net programs to ensure access to care
- An array of excellent public health improvement efforts such as the Governor's Get Healthy Kentucky initiative to promote healthy lifestyles
- Health insurance market improvements such as Kentucky Access, a high-risk pool option for people with high cost conditions, and ICARE, a small business insurance incentive program.

Initiatives such as these must connect to policy solutions that address the fundamental inefficiencies and quality of care and health outcome challenges outlined in the previous section. e-Health is one of the few policy options with the ability to lower health costs, increase quality of care, and improve the health of ordinary Kentuckians. In addition, a robust Kentucky e-Health strategy can also help the state to cultivate the

e-Health is one of the few policy options with the ability to lower health care costs, increase quality of care, and improve the health of Kentuckians while also enhancing economic opportunity in the Commonwealth.

development of health information technology (HIT) businesses and economic opportunities within the state.

The use of e-Health, health information technology (HIT) and health information exchange (HIE) have the potential to reduce medical errors, improve medical decision-making, and empower consumers to make better personal health decisions. Health information technology has the potential to lower costs by reducing hospitalizations, medical errors, and duplicate testing. It can also eliminate a portion of the estimated \$527 billion in administrative costs currently spent on telephone calls, faxes, printing, and other paper-based information exchange methods.

Recognizing this need, Kentucky undertook an ambitious effort to enhance the use of technology in health care and public health. In 2005, the General Assembly passed legislation, known as Senate Bill 2, which called for the creation of a secure, interoperable statewide electronic health network. Senate supporters, including Senate President David Williams and physician Senator Daniel Mongiardo, worked in conjunction with Governor Fletcher's Administration to secure passage of this bill in both chambers. On March 8, 2005, Governor Fletcher signed SB2 into law.

In Kentucky, the passage of SB2 in 2005 ignited interest and established the structures for furthering e-Health. This legislation created the Kentucky e-Health Network (KeHN) Board to oversee e-Health efforts in the state. It also established the Health care Infrastructure Authority, a partnership of Kentucky's two major research universities – the University of Kentucky (UK) and the University of Louisville (U of L) – to provide leadership for the Board. The Cabinet for Health and Family Services, at the urging of Governor Fletcher, has taken a leading role in fostering e-Health in the state by providing staff support to the Board and working with the Board leadership from UK and U of L.

Kentucky's e-Health efforts face a challenging environment. The first challenge is the low level of investment in technology and e-Health relative to other states. Adoption rates for electronic medical record systems, e-Prescribing, and other forms of health information technology are currently low in the state. A study conducted by the University of Kentucky found that 21 percent of primary care practices surveyed used an electronic medical record (Andrews et al., 2004). In a study done by the Kentucky Medical Association (KMA) only 59% of physician practices with electronic medical records systems have the connectivity to communicate prescriptions to a pharmacy electronically (KMA, 2005).

Moreover, in Kentucky there are very few health care markets able to financially sustain a regional health information organization (RHIO) or other local e-Health effort due to the lack of a critical mass of people necessary to cover fixed costs. Three RHIOs exist within Kentucky with differing levels of maturity. One active RHIO, HealthBridge, located in northern Kentucky and the greater Cincinnati area is one of the nation's longest running and most financially viable community e-Health efforts. Both the Louisville Health Information Exchange (LouHIE), and the Northeast Kentucky RHIO began in 2006 and are in the planning stages. Each of these local initiatives is working with the KeHN Board and its statewide efforts to foster a more innovative health care system in Kentucky. (See text box below for more information on Kentucky RHIOs)

While only a few local health information exchange efforts are underway in Kentucky, there are other notable examples of e-Health efforts including the Veterans Health Administration, the Kentucky Department of Corrections electronic medical record system, and the Kentucky All Schedule Prescription Electronic Reporting system (eKASPER). There is great need for a statewide coordinating structure to be able to utilize strategically available resources to facilitate development of a fully functional statewide Kentucky e-Health Network that can also participate in the national effort.

After completing its assessment and administrative organization early in 2005, the KeHN Board initiated several critical breakthrough projects in 2006 necessary for the development of e-Health in Kentucky. In addition, the Board appointed an advisory group of HIT experts, clinicians, and representatives from within the state-based RHIOs to assist with the long-term planning needed for the statewide initiative. These projects and their anticipated impact on Kentucky are described below.

- *Annual Kentucky e-Health Summit and Annual Report*

Because of the highly collaborative nature of e-Health, one of the critical needs in Kentucky is to inform, inspire action, and discuss critical needs and challenges among a broad cross-section of stakeholders about the progress of e-Health and the work of the KeHN Board.

The KeHN Board hosted its first statewide e-Health Summit in January 2007 as a means to bring together payors, providers, consumers, and other interested stakeholders to learn about and discuss the development of e-Health in Kentucky. A number of prominent national speakers and state leaders appeared including National Health Information Coordinator, Dr. Robert Kolodner, and Governor Ernie Fletcher. At the Summit, the KeHN Board released its first Annual Report, providing an overview of its initial assessment of the e-Health landscape and critical recommendations for moving e-Health forward.

- *Kentucky Health Information Partnership (KHIP)*

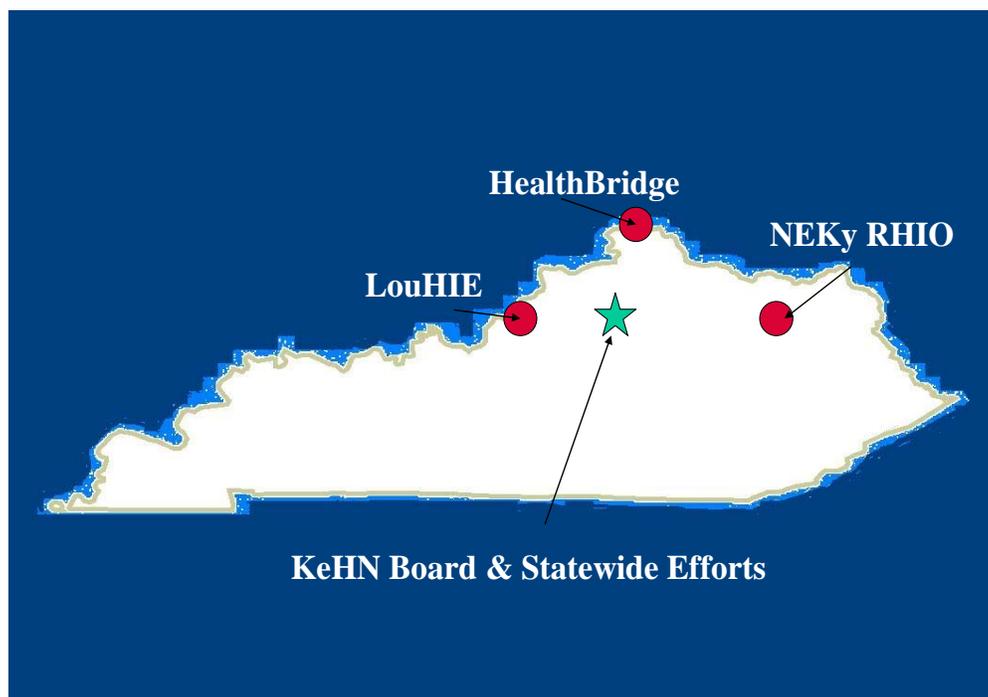
Upon the advice of e-Health experts who urged the use of available electronic information, Secretary Mark Birdwhistell of the Kentucky Cabinet for Health and Family Services invited representatives from the major health plans in Kentucky, including Medicaid and Passport, as well as leadership from the KeHN Board and ConnectKentucky representatives to participate in a dialogue concerning e-Health. The purpose of the meeting was to explore interest in working together with the KeHN Board on a statewide e-Health initiative that could use health plans' electronic claims data to add value to the health care system and improve health care quality. Secretary Birdwhistell indicated that Medicaid was interested in developing a claims-based health record for its members and invited other partners to join the Cabinet and the KeHN Board in pursuing this project as a statewide e-Health initiative.

In August 2006, the Cabinet, on behalf of the group, presented a concept paper to the Kentucky e-Health Network Board that proposed joint development of a statewide internet portal with two main areas of functionality: a clinical site that could deliver to providers a patient health summary based on claims data and an administrative site for conducting standard administrative transactions across all plans, such as claims submission and eligibility and benefits verification

(see Table 1 below). This initiative was designated the Kentucky Health Information Partnership or KHIP. In January 2007, Kentucky was awarded \$4.9 million from the Centers for Medicare and Medicaid Services through a Medicaid Transformation Grant to develop KHIP.

Kentucky RHIOs & Local HIE Efforts

- **HealthBridge** is a nationally recognized health information exchange serving the Greater Cincinnati area, including several counties in Northern Kentucky. Formed in 1997, HealthBridge is the largest community based clinical messaging system in the country. By working with all participating healthcare stakeholders, HealthBridge is facilitating an integrated and interoperable electronic community healthcare system. HealthBridge delivers electronically over 1.4 million results (laboratory, radiology, transcription and ADT) to over 4,000 physicians each month. HealthBridge provides access to over 60 hospital-based critical care systems including radiology images, fetal heart monitoring, hospital-based electronic medical records and chart completion, among others. While health care in the rest of the country is still dominated by paper, phone and fax, HealthBridge has changed the care environment in the Greater Cincinnati and Northern Kentucky area, making e-Health an everyday reality.
- **Louisville Health Information Exchange (LouHIE)** is a new Regional Health Information Organization (RHIO) in the Greater Louisville area. Established in January 2006, LouHIE was the result of two years of research and effort by faculty of the University of Louisville. LouHIE has grown into a community-wide effort encompassing a broad set of stakeholders, including representatives from payors, providers, practitioners and consumers. LouHIE's goal is to lower costs and improve healthcare in the community and is currently exploring the development of a community health record bank as the model for health information exchange in the community.
- **Northeast Kentucky RHIO** is a partnership between Morehead University, Northern Kentucky University and St. Claire Regional Medical Center. Currently under development, the Northeast Kentucky RHIO seeks to establish a health information exchange that serves the northeastern Kentucky region.



A common administrative portal and a patient health summary can optimize the flow of information between all health care stakeholders. This in turn can improve health outcomes, eliminate administrative inefficiencies, reduce costs, and enhance the patient experience in Kentucky’s health care system. Initial estimates of cost savings to Kentucky exceeded \$40 million dollars. Using data from nearly all the major payors in Kentucky, KHIP would have information for more than 60 percent of Kentucky’s 4 million residents, including Medicaid’s 710,000 enrollees, the 135,000 enrolled in the Passport managed care plan in Louisville; 231,000 Kentucky state employees; and more than a million of Kentucky’s privately insured residents.

Table 1: Functions and Information Available through the KHIP Web Portal

CLINICAL INFORMATION:	ADMINISTRATIVE INFORMATION:
<ul style="list-style-type: none"> • Rx history - including medication – identified by national drug code; date prescription filled; days of supply • Provider service information – including outpatient, inpatient, and emergency room visit information with name of the treating provider, place of service, date of visit, reason for the visit, procedures performed during the visit, and provider phone, city, and state • Diagnosis codes - including diagnosis, dates patient received care for this diagnosis, the place of service, and the doctor • Lab and diagnostic test history - type of lab/test performed, date lab/test performed, place of service and doctor ordering • Immunizations– immunization, date performed • Patient information – such as name, date of birth, age, gender, address, and phone 	<ul style="list-style-type: none"> • Request for eligibility verification • Submission of request for pre-authorization • Check status of prior authorization request • Submission of new medical claims • Check status of submitted claims

- *Kentucky e-Health Privacy and Security Collaboration*

One of the critical concerns with the public about electronic health information exchange is the protection of the privacy and security of personal health information. To address these issues, the federal government has spearheaded a project in partnership with states to assess how privacy and security practices and policies affect health information exchange (HIE).

Kentucky was one of 33 states to participate in the Health Information Security and Privacy Collaboration, a federally-funded collaboration involving the Office of the National Coordinator, the Agency for Health care Research and Quality, RTI, and the National Governors Association. The Cabinet for Health and Family Services (CHFS) served as the project lead and partnered with the University of Louisville and the University of Kentucky on key deliverables for this initiative.

Multiple working groups with more than 60 stakeholders were established under the Collaboration to identify business practice and legal barriers to HIE in Kentucky and develop solutions and an implementation plan. The project is anticipated to generate a number of

recommendations to the KeHN Board on changes that need to be made to practice, policy, and law in Kentucky in order to ensure the ability to exchange health information securely and confidentially using electronic means.

- *The e-Prescribing Partnerships in Kentucky (ePPIK) Grant Program*

e-Prescribing is widely viewed as an important early win that can drive adoption of HIT by physicians and increase the efficiency and safety of health care. CHFS partnered with the KeHN Board and the Governor's Office for Local Development to offer a new grant program to fund adoption of health information technology to advance e-Prescribing in the Commonwealth. The e-Prescribing Partnerships in Kentucky (ePPIK) Grant program has provided funding for physician's offices and clinics that want to purchase HIT software with e-Prescribing capability. In addition, the ePPIK grant program promotes the formation of partnerships within a community between physician's offices, hospitals, pharmacies, and other health care entities to facilitate true end-to-end electronic prescription processing.

A total of \$300,000 in funding for the ePPIK grant program comes from the Foundation for a Healthy Kentucky and the Hal Roger's Grant Program within CHFS that supports the Kentucky All Schedule Prescription Electronic Reporting (eKASPER), the nation's premier program to monitor prescription drug abuse of controlled substances. These two sponsors are interested in improving health care in Kentucky and learning how e-Prescription adoption will affect the KASPER program.

The Governor's Office for Local Development serves as the administrator of the grant under the direction of CHFS. Grant applicants are required to match grant funds with their own investment. Governor Fletcher announced awards ranging from \$10,000 to \$81,000 to 5 partnerships around the state in January 2007.

- *Kentucky e-Health Advisory Group and Action Plan*

In addition to the key accomplishments above, the KeHN Board also seated an advisory group of technical and clinical experts to assist with the development of a long-term strategy for e-Health in Kentucky. This Kentucky e-Health Action Plan is the culmination of months of deliberation and discussion by the e-Health Advisory Group under the KeHN Board's direction.

The purpose of this Action Plan is to outline the principles, objectives, and action steps necessary in the next five years to move Kentucky forward in achieving the vision of Senate Bill 2, implementing the infrastructure necessary to encourage the use of health information technology and enabling the development of statewide health information exchange while also ensuring Kentucky's full participation in the national NIHN initiative.

Kentucky e-Health Board's Mission & Vision Statement

Mission: The Kentucky e-Health Network Board will champion the development of a secure, interoperable electronic health network with the goal of improving the quality and cost-effectiveness of health care and providing access to useful, timely and accurate health information.

The vision for the Kentucky e-Health Network is to:

- Improve the quality of patient care and the public health of all Kentuckians
- Support clinician and caregiver decision making through health information technology and exchange
- Increase the safety and efficiency of Kentucky's health care system
- Lower costs and increase value for consumers and stakeholders
- Protect all citizens through enhanced research opportunities and public health capacity
- Enhance economic development opportunities within the Commonwealth through increased investment and job creation in health information technology, more competitive health care marketplace, and a healthier and more productive workforce.

The Board will pursue these goals by:

- Evaluating and recommending a model to support and facilitate statewide health information exchange
- Pursuing intermediate projects that offer near-term benefits to patients and stakeholders, leverage existing electronic health data, and build toward the statewide network
- Respecting regional differences and encouraging local innovation and collaboration in a way that does not preclude future information sharing between those regions
- Encouraging the adoption of health information technology by clinicians and other stakeholders across Kentucky
- Respecting the privacy of patients, practice patterns of clinicians, and business practices of other stakeholders
- Utilizing the research, resources, and recommendations of Kentucky's state universities coordinated by the University of Kentucky and the University of Louisville through the Healthcare Infrastructure Authority
- Working collaboratively to learn from and inform federal efforts to develop common e-Health solutions and the National Health Information Network
- Identifying opportunities to further the goal of e-Health while advancing Kentucky's economy and increasing our knowledge-based resources.

Principles of the Action Plan

The KeHN Board has a key role to play in creating an environment for collaboration, coordination, and sharing of valuable information among stakeholders, state government, and local HIE efforts in the state. The KeHN can also play an integral role in balancing the rights and needs of all residents with the imperatives of an efficient system while ensuring that statewide barriers to HIE are removed or mitigated through state-level policy changes. The statewide scope of these initiatives assumes a responsibility for the interests of all state residents, including the underserved. In addition, there is a fundamental mandate for a state to create uniformity, to adopt nationally recognized standards and to function as a connection among state government, local HIE efforts, other states and the planned nationwide health information network (NHIN). The KeHN can reduce duplication of effort in local HIE implementations, ensure knowledge is shared across local HIE efforts to facilitate learning from each other, and convene the local HIE efforts and statewide stakeholders enabling constructive dialogue and coordination. The involvement of state government in the public-private partnership places the KeHN initiative in a unique position of being able to facilitate statewide HIE policy and related legislation, enable statewide process changes, and have the influence and leverage necessary to carry through on the organization's goals (Foundation of Research and Education of AHIMA [FORE], 2006).

A. Improving Clinical Practice

Health information exchange must fit into the clinical workflow and be sensitive to the concerns of clinicians and patients. The clinical point-of-care must be the primary orientation for HIE, which is intended to support medical decision-making by providing the most complete information about a patient, when needed and when requested. In order to achieve that end, however, it is equally important to focus on consumer benefits (see Appendix A). Basic principles for improving clinical practice include:

- Understand clinical workflow
- Focus on improving clinical practice
- Focus on patient benefits and improving outcomes
- Focus on empowering consumers to more effectively manage their health care needs
- Understand and support local and regional referral patterns and trading areas.

It is important to recognize that improving clinical practice will take the combined efforts of all health care stakeholders. If stakeholders can act with accountability and demonstrate the willingness and ability to change, they can achieve a win-win transformation and help the citizens they serve lead healthier, more productive lives.

Statewide e-Health Roles
Based on the FORE 2006 Overall Role Classification

- **Convene, educate, and innovate**
 - Convener of stakeholders
 - Education and advocacy
 - Track federal policy, proposed legislation, and federal strategic direction and then communicate that with local HIE efforts and work together to review state and local strategic directions in light of the federal direction
 - Serve as a source of information about local HIE efforts
 - Encourage the adoption of HIT and EHRs to support the infrastructure capacity for statewide HIE
 - Facilitate consumer input, monitor public opinion, and help communicate with the public

- **Coordinate, develop, and enforce policy, standards, and legislation**
 - Promulgate standards to apply to all HIE efforts in the state and/or vendors doing business in the state
 - Lead in development of public policy for statewide HIE goals
 - Identify statewide barriers to HIE, develop plans to address, advise on legislation or other actions to remove barriers, and identify and remedy gaps in the HIE service (e.g., underserved areas)
 - Enforce HIE policy

- **Gain efficiencies within state government**
 - Help the various state government agencies share their information more effectively and efficiently and avoid making complex internal changes

- **Connect with communities, neighboring states, and the federal government**
 - Serve as a neutral forum between local HIE efforts and/or stakeholders to resolve disagreements, but only as they relate to the statewide effort
 - Link state and local HIE efforts to nationwide HIE efforts (e.g., NHIN)

- **Negotiate, facilitate, and operate**
 - Negotiate arrangements with vendors for purchase of products or services for local HIE activities and exercise leverage to facilitate meetings
 - Serve as a central hub for statewide or national data sources and shared services
 - Facilitate funding of local HIE efforts (not necessarily be the source of funding but rather assist and facilitate funding)
 - Technically link local HIE efforts together
 - Sponsor demonstration projects to advance the adoption of HIT and HIE
 - Provide technology services or other assistance to areas of the state not well served by local HIE efforts
 - Provide other administrative support and serve as an information resource to local HIE efforts (e.g., legal support, grant availability, grant writing and administration, technical services, options for technical architecture, list of possible vendors)

B. Advancing HIT Adoption in Kentucky

Adoption of health information technologies is hampered by a lack of “certified standards,” insufficient understanding of how to introduce new information technology into busy physician practices, lack of capital and financing, and the need for an infrastructure capable of supporting medical care.

Addressing these issues requires a holistic approach that recognizes the systemic nature of the problem. Changing pieces individually will not necessarily add up to the desired results nor produce sufficient benefit and return on investment. Although solutions may be implemented in small steps, each step must be done within the broader context of the bigger picture and recognizing that achieving the full benefits of HIT requires transforming practice not just implementing technology. Thus to advance adoption, solutions must be based on the following principles:

- Focus on the big picture and implement in manageable phases
- Seek a common platform based on standards and interoperability to protect the investment of providers and ensure their capability to participate in regional, state, and national health information exchange solutions
- Seek affordable, self-supporting solutions
- Focus on practice management issues not just technology
- Look for systemic solutions that recognize the complexity of transforming clinical workflows
- Allow flexibility to accommodate varying practices and clinical needs
- Recognize that there is no “one-size-fits-all” solution.

C. Facilitating Collaboration

A key role for the KeHN is that of convener, educator, and facilitator. The KeHN initiative must engage consumers, participants, partners, funding entities and resources at the local, regional, state and national levels. Today’s health care problems are so complex that they cannot be solved unilaterally by a single stakeholder group. Successful transformation will require active participation, collaboration and changes by all stakeholders.

Fostering collaboration will require all stakeholders to focus on the broader goals and set aside narrow self interest. Viable solutions also must recognize the global nature of today’s health care environment. Although much health care today is still local, most health care consumers have multiple providers often extending beyond the local region and state boundaries. All parties have a stake in making the delivery of health care as efficient and effective as possible. To facilitate collaboration, KeHN should:

- Create a balanced public-private partnership, only a partnership that brings value to all stakeholders will endure
- Support better collaboration across all sectors of the health care industry
- Clearly identify benefits being achieved for all stakeholders
- Focus on common goals and foster a culture of collaboration.

D. Building on Operational Successes in Kentucky

The KeHN will both promote and learn from regional and local HIT and HIE initiatives. It will be important for the KeHN to work with local RHIOs and other HIT and HIE efforts in the state to learn from their successes as well as to ensure alignment and coordination in achieving common goals. The KeHN will serve a dual purpose of fostering HIE statewide as well as serving as a support and coordination structure for local and regional HIT and HIE efforts. KeHN should:

- Help ensure that investments in HIT and HIE at all levels are directed toward transforming health care to increase efficiency and improve patient outcomes
- Support local innovation and initiative while advancing goals for universal health information exchange
- Serve as a support and coordination structure for local HIT and HIE efforts
- Create an e-Health culture across Kentucky's health sector.

E. Advancing Kentucky Economic Development with Sustainable HIT Businesses and Workforce Training

The transition to HIT and HIE will introduce new opportunities for economic development and innovation, which the State needs to foster and support. A healthier workforce can also improve economic competitiveness. Basic principles related to economic development include:

- Build trust in local health care to keep patients within Kentucky
- Improve the quality of care and increase confidence in regional medical care
- Support a productive workforce by improving the quality of health care and the public health of all citizens
- Provide incentives and support for the development of emerging health care technology industries within the State
- Enhance the business environment for both small and large employers by helping to control health care costs.

F. Ensuring Privacy and Security

Medical privacy is the desire to control what information is shared about a person's health status. Security is about how confidentiality is ensured once the patient and the person holding the data enter into an agreement, including safeguards required to ensure that the data are only provided in an appropriate manner to those persons with the authorization to view the data. More simply, privacy is about people while security is about systems, these differences are recognized in federal law (FHIN p9). Basic principles for ensuring privacy and security include:

- Make a primary objective protection of the privacy and security of health information
- Ensure the reliability, availability and protection of data 24/7 including provisions for business continuity and disaster recovery
- Enhance consumers' ability to control the exchange of their personal health information
- Ensure that all users are reliably authenticated
- Comply with all applicable privacy and security regulations
- Ensure system security is maintained and reviewed periodically to assess compliance with current standards.

G. Earning Trust

Exchange of data across traditional competitive boundaries is a relatively new experience vital to the e-Health transformation in the health sector. Trust will come by virtue of balanced stakeholder representation and transparency. Moreover, engagement of health care consumers in the access, control, and use of their personal health care information will be critical to building and maintaining trust. To earn trust KeHN must:

- Set a tone of collaboration, with KeHN board and committee members concerned with more than their own proprietary agendas
- Maintain KeHN's role as a neutral, multi-stakeholder entity representing the interests of the varied stakeholders
- Appoint members based on the skills and competencies needed to carry out the work
- Educate early and often to help alleviate fear and uncertainty about sharing health care data
- Respect provider needs and practice patterns
- Respect consumer rights and dignity
- Operate statewide HIE through a non-governmental but trusted entity such as a not-for-profit corporation (FORE 2006, p. 24)
- Ensure that the KeHN creates value for all stakeholders (consumers, providers, payors, public health, and government agencies).

This section outlined key roles and principles for the envisioned Kentucky e-Health Network. Components include improving clinical practice, advancing HIT adoption, facilitating collaboration, building upon best practices, advancing HIT economic development, ensuring privacy and security, and earning trust. These guiding principles provide a foundation for recommendations offered in this action plan to achieve the KeHN vision and goals. The next section outlines the key actors involved in driving the e-Health transformation.

Stakeholders Involved in Achieving the Plan

The movement to use information technology to a greater degree in the health sector is supported by many different actors inside and outside of health care and public health. For many years, large employers have called for the use of information technology to improve care through groups such as the Leapfrog Group and various state and regional Business Groups on Health. Advocates for health care quality improvement have also promoted information technology as integral to achieving consistent high quality health care and played a leading role in advancing e-Health.

For e-Health to be successful, it is absolutely essential for collaboration to occur across traditional competitive boundaries. It is not enough for an individual health care practice, local health department or hospital to adopt electronic health records or to improve a clinical information system. If electronic health information remains an isolated island, the true promise of e-Health to improve care and outcomes while controlling costs cannot be realized. In the same way that it is not enough for individuals to own cars without roads, states and communities cannot simply urge the adoption of electronic health records and hope that someday we will be able to share this information when needed. Stakeholders must work

together to ensure that health information can be shared when necessary and appropriate across a variety of organizations and settings.

While broad stakeholder involvement is essential, it is also necessary to ensure appropriate balance among differing interests and perspectives. To assist with simplifying the complexity of health care, researchers at the University of Louisville School of Public Health developed a four quadrant approach to understanding the multiple, interconnected layers involved in forming and enabling health information exchange. A description of the four stakeholder Quadrants of Purchasers, Payors, Providers and Practitioners are provided below with the role and benefits each type of stakeholder group derives from e-Health. Just as each individual has multiple relationships with our health care delivery system, the stakeholders involved in achieving the Action Plan may have multiple roles to play in implementing the Action Plan. For example, a physician may become a patient, or a University may work as a provider on a care quality initiative with a Hospital but also may act as a purchaser of health care services for its employees. In general, stakeholders involved with accomplishing this action plan are categorized according to their primary role.

Four Stakeholder Quadrants	
Q1: Purchasers	Q2: Payors & Resources
State/Federal Governments Private Employers Patients & Individual Consumers	Health Plans & Third Party Administrators Technology Infrastructure & Providers Workforce Development (Universities, etc.)
Q3: Providers and Producers	Q4: Practitioners
Hospitals & Other Health Care Facilities Pharmacies, Labs & Others Health Services Product Suppliers	Physicians Other health professionals Public Health

Quadrant 1: Purchasers/Consumers

Purchasers and consumers of health care are interested in cost containment, improved care quality and convenience, access to lifetime health records, access to better aggregate data for planning and assuming personal responsibility for their health and maximizing the value received from a transformed health care system.

- State and Federal Governments:
Between state government employees and Medicaid beneficiaries, Kentucky state government is the largest single consumer of health care services representing 25% of the population. The state has an interest in providing for safety net populations as well as ensuring information is accessible to people of varying education levels. The state will drive and facilitate HIT and HIE activities with providers who provide services to state employees and Medicaid members. Added to the state role in health

care is the significant role played by the federal government in Kentucky including the federal partnership in Medicaid as well as the large number of Medicare beneficiaries, federal government employees, members of the military and veterans in Kentucky. Thus, coordinated cost containment and efficient care delivery will benefit all taxpayers in Kentucky.

- Private employers and unions, and their employees:
Employers and unions represent large consumers of health care since they often contribute to or provide health care coverage for their employees/members. These groups can use their purchasing power to shape policy and encourage HIT adoption by providers. Employers and employer groups understand the benefits and savings associated with healthier employees.
- Consumers:
Use of HIT and HIE will give individual consumers access to their own health care records and to quality information when selecting a provider. Informed consumers can take a more active role in managing their own health status and can drive health care quality by making informed choices. Both actions will create savings that benefit all Kentucky residents. Consumers who are informed about requested access to their health care records will be able to detect medical identity theft attempts just as consumers who monitor their credit reports are able to detect credit identity theft.

Quadrant 2: Payors/Plans

Improved health care infrastructure processes including authorization and payment, technology infrastructure and workforce support, will reduce administrative overhead for payors/plans, help consumers remain healthy and assist care delivery organizations and clinicians to deliver higher value health care. Use of HIT and HIE provide data for risk analysis, utilization review and outcomes measurement. Payors/plans often drive the collection of quality and outcomes data. Since payors/plans are responsible for the financial management of health care delivery payments they benefit directly from the saving incurred from implementation of e-Health technology.

Quadrant 3: Providers

e-Health will give providers improved ability to deliver high product/service value efficiently and expand their current focus on episodic, acute care to encompass the enhanced management of chronic diseases and the life-long prediction and prevention of illness. Health technology vendors and retail service organizations must work collaboratively with care delivery organizations, clinicians, and patients to produce products that improve outcomes or provide equivalent outcomes at lower costs.

- Kentucky hospitals, other health care facilities, their organizational associations such as the Kentucky Hospital Association and associated Universities:
These direct care providers often seek operational efficiencies and care improvement by implementing HIT within their organizations. This is frequently driven by the need to control the care cost and improve care quality. Associations and Universities provide direction on best practices for care and HIT usage. Administrators in provider

organizations take responsibility for these costly and disruptive efforts. Implementation of e-Health technology will reduce the risk each provider takes in HIT implementation and will expand HIE usage across provider organizations. This will improve HIT adoption and improve care delivery as patients move from one care setting to another.

- Health technology firms including pharmaceuticals and Health IT Vendors:
Health technology vendors offer a variety of services to improve care delivery, tracking and billing. These vendors play a critical role in advancing standards and interoperability for regional, state, and national HIE. Pharmaceuticals offer products to improve clinical trial efficiency, improve compliance with effective modalities and improve post-market surveillance. The e-Health project can drive vendor's cooperation in providing interoperable, quality systems.

- Retail health service organizations, laboratories, pharmacies, clinics and product suppliers:
Improved access to information will increase efficiency, effectiveness and quality. Many retail organizations such as retail pharmacy chains or commercial laboratories already have implemented extensive information exchange across their organizations. The e-Health plan will facilitate and encourage technology implementation at smaller locally based organizations as well as connectivity to existing large retail chains or commercial organizations.

Quadrant 4: Practitioners

Individual health care providers who deliver health care services to the consumers will have an improved ability to care for patients by using HIT and HIE technology.

- Physicians, Advanced Practice Nurses and other health professionals:
HIT and HIE can provide access to complete patient information at point of care, strengthen provider/patient relationships, improve care quality, support personalized patient messaging and provide immediate eligibility and formulary information. Like Hospital Administrators, individual practitioners take responsibility for costly HIT implementation within their own organization. The e-Health project will reduce the risk each provider takes in HIT implementation and will expand HIE usage across organizations. This will improve HIT adoption and improve care delivery as patients move from one care setting to another.

- Public health and other consumer health educators:
HIE will provide this group with improved monitoring of community health, personalized patient messaging capability, and improved emergency preparedness and response.

III. Objectives and Proposed Action Items

One of the most important tasks for any e-Health movement is to advance a common vision and strategy for achieving a desired future. The Kentucky e-Health Network Board has formulated its mission and vision for e-Health in Kentucky based on the authority given to it through Senate Bill 2. The following objectives and action items are recommendations for how to make the mission and vision of Senate Bill 2 and the Kentucky e-Health Network a reality.

In the same way that our transportation system involves both the public and private sectors and local, state and national level efforts, so too e-Health is a multifaceted effort with roles and responsibilities for each sector and level of our society. This plan naturally focuses most directly on the KeHN Board and its activities but the goal of Kentucky's e-Health efforts is to engage activity among every stakeholder group and every quadrant of the health sector in Kentucky.

Therefore, each of the objectives and action items cannot be viewed as a wholly independent activity. Every objective and action item is interconnected to the whole plan. For example, Kentucky needs to increase use of health information technology but it also needs to enable health information exchange. Also, it is not enough for action to occur at the state level. Kentucky also needs to be connected to national e-Health efforts as well as local e-Health initiatives. Moreover, this e-Health Action Plan is not intended to direct state government efforts alone but is intended to catalyze private sector efforts as well. A coordinated strategy will help ensure that Kentuckians - no matter where they are - can have their health information available electronically for the clinicians treating them. It can also help the Commonwealth to achieve lower cost, higher quality health care and healthier people.

The table below summarizes the list of recommended objectives and action items. Some items already have funding secured and have begun implementation. Other items are important but lack the funding necessary to accomplish them at this time. Those items that have funding currently and are planned to be undertaken or accomplished in 2007 are listed in bold below. In addition, the Board has recently appointed new committees and work groups to assist with its work. Where possible, each action item has been assigned to a committee or work group for oversight and implementation.

SUMMARY TABLE OF OBJECTIVES AND ACTION ITEMS

Description of Objective & Action Items	Implementation Responsibility	Funding Available for 2007
Objective #1: Foster Improvement in Quality of Care and Health Outcomes while Containing Health Care Costs		
Convene an annual Kentucky e-Health Summit	KeHN Board	✓
Integrate Health IT Efforts with Quality Improvement Efforts	HIT Adoption Committee	
Pursue Common Chronic Care and Disease Management Tools	HIT Adoption Committee	
Integrate Population/Public Health Goals into e-Health Efforts	KeHN Board	
Objective #2: Facilitate Statewide Health Information Exchange		
Develop and Implement the Kentucky Health Information Partnership (KHIP)	CHFS, KeHN Board, KHIP Stakeholder Work Group	✓
Conduct Statewide e-Health Inventory, Needs Assessment and Medical Trading Area (MTA) analysis	HIT & HIE Committees	✓
Develop a Common HIE Infrastructure Necessary for the Statewide Kentucky e-Health Network	Advisory Group, HIE Committee	
Objective #3: Foster Consumer Empowerment Through HIT & HIE		
Catalyze Consumer Support for e-Health	KeHN Board, CHFS	
Address e-Health Privacy and Security Concerns	Privacy and Security Committee	
Assist Consumers/Patients to Locate Providers that Use or Accept EHRs/PHRs and Build Capacity for PHR Development and Use	HIT Adoption Committee	
Objective #4: Foster Increased Use of Health Information Technology		
Incentivize, Reward and Facilitate HIT Adoption	HIT Adoption Committee	✓ (some)
Implement Pilot Projects and Grants Programs to Assist with HIT Adoption	HIT Adoption Committee	✓ (some)
Develop e-Health Resources to Assist Health IT Adoption	HIT Adoption Committee	✓ (some)
Objective #5: Facilitate and Collaborate with Local HIE Efforts		
Assist with Local HIE Development	HIE Committee	
Share the Statewide HIE Infrastructure and Resources with Local HIEs	Advisory Group, HIE Committee	

Objective #6: Collaborate With Federal and Interstate e-Health Efforts		
Implement Findings and Recommendations from the Kentucky e-Health Privacy and Security Collaboration	Privacy and Security Committee	✓
Integrate Federal Health IT Standards and Certification into State and Local e-Health Efforts	Advisory Group, HIE Committee	
Pursue Collaborative Opportunities with National/Federal Efforts for Kentucky e-Health Projects and Initiatives	HIE Committee	
Objective #7: Link e-Health with Economic Development Efforts		
Develop Linkages to Existing Technology Adoption Efforts Within Kentucky	Economic Development Committee	
Ensure Appropriate e-Health Grant Funds Come to Kentucky	KeHN Board, CHFS	✓
Foster Development of e-Health Businesses in Kentucky	Economic Development Committee	

***Items marked in bold have funding currently and are actions slated for implementation in 2007.**

Objective #1: Foster Improvement in Quality of Care and Health Outcomes while Containing Health Care Costs

Objective #1 lies at the heart of why an e-Health network should be developed. It represents the fundamental principles which should drive the design and implementation of an e-Health system, to ensure e-Health actually improves care and health outcomes while containing costs for all stakeholders.

The Action Items under Objective #1 seek to foster improvement in the quality of care and health outcomes and contain health care costs. Quality of care involves accurate diagnosis, prescription for and treatment of disease. It is measured in terms of accuracy and completeness of tests and diagnosis, the degree to which prescriptions comply with evidence-based recommendations based on currently established best practices, and the degree to which care is delivered accurately and without error. Health outcomes refer to the results of a care-giving process. Outcomes are measured in several ways, including percent of time full recovery occurs, death rate, and quality of life measures. Health care costs refer to the direct cost of care as well as the indirect costs from lost productivity, missed work days and lower quality of life. Costs can include patient costs, employer costs, insurance costs, and provider costs. Cost containment can be achieved through preventing complications, avoiding hospitalizations, prescribing more accurately, eliminating duplicate tests, and improving information delivered to patients and providers for a more effective management of the recovery process.

All of the other objectives are linked with Objective #1 but the following action items are specifically recommended to achieve Objective #1:

Action Item 1.1 Convene an Annual Kentucky e-Health Summit Beginning in January 2007

- ❑ The annual summit is an opportunity for all stakeholders to come together to share learning and results, and share plans for improving quality of care, care outcomes, and cost-containment efforts. It is important to have an opportunity for networking and planning across the state. The first summit in January 2007 was a great success, with over 300 registrants.
- ❑ The Kentucky e-Health Network Board should continue to convene and host this event annually.

Action Item 1.2 Integrate Health IT Efforts with Quality Improvement Efforts

- ❑ There are a variety of quality improvements efforts being explored or implemented by payors and Medicaid. These involve the development of new measures for quality, and outcomes, and the payment to providers of additional funds for improved quality measures, or reduction of compensation for failure to deliver improved quality measures. This can be a controversial issue, since many measures of quality are not agreed upon by all parties. Health IT efforts can facilitate this process by providing more accurate, normalized data for purposes of measuring quality.
- ❑ The Health IT Adoption committee of the KeHN Board should explore whether it or another statewide entity could coordinate the use of consistent standards for quality measurement and improvement for Kentucky.

Action Item 1.3 Pursue Common Chronic Care and Disease Management Tools

- ❑ Chronic care and disease management efforts represent “low-hanging fruit”. More than 75 percent of medical costs are incurred for managing chronic conditions and quality of care is often inconsistent for chronic conditions, resulting in many preventable complications. Selection and implementation of best practices across all payors, practitioners and providers should be encouraged. This activity should be carefully coordinated to ensure objectivity.
- ❑ The Health IT Adoption Committee of the KeHN Board should examine how to incorporate chronic care and disease management best practices into e-Health and HIT adoption activities. Chronic care and disease management providers should be invited to participate in discussions and provide input into this activity. Patient/Consumer input and education on any proposed solutions should be included.

Action Item 1.4 Integrate Population/Public Health Goals into e-Health Efforts

- ❑ Population and public health goals, including electronic disease surveillance, health outcomes and monitoring, and consumer health education efforts, should be an integral part of an integrated e-Health network approach.

- Each KeHN Board committee should have representation from public health. These members should assist with the development of policies and activities across health care and public health that will allow the state e-Health network to build on, interconnect and integrate with public health information systems and networks.

Objective #2: Facilitate Statewide Health Information Exchange

Senate Bill 2 (SB2) authorizes the creation and operation of a statewide electronic health network, and Objective #2 outlines the long-term policy and technology plans to fulfill the mandate of SB2 through an incremental process. Federal funding has enabled Kentucky to begin work on Objective # 2 through the Kentucky Health Information Partnership (KHIP). However, this project is only the foundation of a much larger effort to build a robust statewide e-Health Network. Meeting the full mandate of SB2 will require an on-going development process which will be affected by available funding, technology development, state and national policy efforts, cultural shifts, or possibly even unanticipated natural disasters or disease outbreaks.

Development of a statewide network should not be interpreted to mean centralized or state-government owned, however. The Kentucky e-Health Network is envisioned as a robust public-private partnership that should operate in the non-governmental sphere. In addition, local HIE efforts outlined in Objective #5 are also absolutely critical to building the statewide network. The state level efforts would provide a baseline set of functions are available across the state, oversee a shared technology infrastructure, and ensure interoperability among local efforts. Diagram 2 provides a model for how the Kentucky e-Health Network would operate and interface with local HIEs, RHIOs, as well as individual purchasers, payors, providers and practitioners in the state as well as other health organizations and agencies.

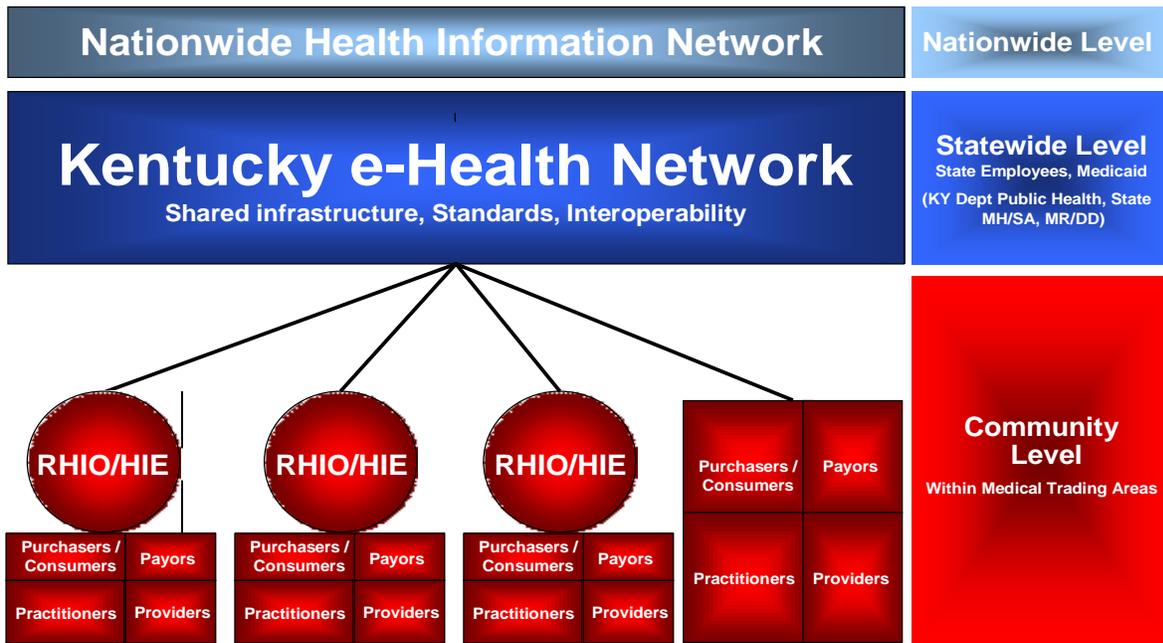
To achieve Objective # 2, the following current and future actions are recommended:

Action Item 2.1 Develop and Implement the Kentucky Health Information Partnership (KHIP)

- Incremental e-Health projects are needed to leverage scarce resources wisely, build trust among stakeholders and allow a step-wise adoption of HIT and HIE in order to build toward a statewide e-Health network. With the goal of utilizing already available electronic data sources, the Cabinet for Health and Family Services worked with stakeholders within Kentucky to submit a proposal for a Medicaid Transformation Grant to the Centers for Medicare and Medicaid Services and was awarded \$4.9 million in February 2007.
- CHFS in partnership with the KeHN Board, the Kentucky Healthcare Infrastructure Authority, and Kentucky stakeholders involved in the KHIP Work Group will develop a common Internet portal for payor-provider health information exchange. Medicaid Transformation Grant funding would support the initial development of the partnership and Medicaid's portion of costs for the first two years. This statewide common information portal will advance electronic health information exchange in two ways:

- **Clinical HIE:** the portal will allow authorized clinicians to view a patient health summary based on claims data and
- **Administrative data exchange:** the portal will give providers a simplified, standardized means to submit electronic transactions and exchange payor data, e.g., claims data.

**Diagram 2: Kentucky Electronic Health Network
State and Community Collaboration**



- CHFS and the KeHN Board will form a stakeholder working group to advise the development of KHIP, a public-private, non-profit organization, and assist with its design, implementation, operation and evaluation. Members of the stakeholder working group will include representatives from the organizations that would supply data for the KHIP web portal, such as Medicaid, private health plans and employers, and also those organizations that would use the portal, such as CHFS departments, physicians and other clinicians, hospitals, administrative staff and consumers.
- CHFS, the KeHN Board, the Kentucky Healthcare Authority, and stakeholder group representatives will form a public-private, non-profit e-Health corporation responsible for the implementation and operation of the KHIP web portal and functions as well as forging partnerships with other stakeholders to implement KHIP. The goal of KHIP and the non-profit corporation is for it to be a financially self-sustaining e-Health venture after two years.

Action Item 2.2 Conduct Statewide e-Health Inventory, Needs Assessment, and Medical Trading Area (MTA) Analysis

- Currently there is no clear understanding of how many providers and practitioners in Kentucky use health information technology and where and how health information exchange relationships occur naturally. The KeHN Board needs a baseline measurement of e-Health utilization in Kentucky and to understand better referral patterns and health care market dynamics.
- The Health Information Exchange and Health IT Adoption Committees of the KeHN Board will work with CHFS and the Kentucky Healthcare Infrastructure Authority to develop a broad-based survey and analysis that measures the use of health IT in various clinical settings; provides information about the e-Health applications used and capacity throughout the state; solicits feedback from providers and clinicians about their e-Health needs; and analyzes the business relationships, referral patterns, and health service utilization in various regions of Kentucky to understand the natural flow of health information in those areas. The KeHN Board will use this Inventory and Analysis to inform its e-Health efforts and measure its progress in transforming the health sector in Kentucky.

Action Item 2.3 Develop a Common HIE Infrastructure Necessary for the Statewide Kentucky e-Health Network

- CHFS and the KeHN Board will work collaboratively with the public-private, non-profit e-Health corporation, the Healthcare Infrastructure Authority and other stakeholders to expand and develop further the KHIP web portal to include other functions/features and additional capabilities as revenue and funding capacity and stakeholder support allows, including offering:
 - the delivery of lab results,
 - public health reporting,
 - integrating Medicare and other payor claims data,
 - access for consumers to their personal health record.
- CHFS, the KeHN Board and the Kentucky Healthcare Authority will utilize the e-Health Advisory Group to coordinate and work in conjunction with the public-private non-profit e-Health corporation and HIEs/RHIOs in Kentucky to build a shared technical infrastructure, including mapping data elements and standard health care terminology/vocabulary across health organizations; the development of a master patient index, master provider/clinician index, record locator and other common technology elements needed for HIE. Developing these HIE infrastructure elements in common will assist privacy and security efforts, lower development costs for HIE among state and local organizations, and ensure interoperability across Kentucky. The common technology infrastructure would be utilized by statewide, community and regional health information exchanges in Kentucky.
- The HIE Committee of the KeHN Board will facilitate the development of a framework of principles, policies, best practices, standards and the regulatory guidelines needed for HIE

within Kentucky and ensure that this framework is consistent with national standards for interoperability. This framework will help facilitate information sharing across multiple entities, including Kentucky's Regional Health Information Organizations (RHIO), purchasers, payors, providers, and practitioners. This HIE framework should provide guidance for the development of KHIP as well as other e-Health efforts in Kentucky and will provide the ability for Kentucky's e-Health efforts to interface with the Nationwide Health Information Network (NHIN) as it is developed by HHS as well as neighboring states' e-Health efforts.

Objective # 3 - Foster Consumer Empowerment through HIT & HIE

Empowering consumers to take an active role in managing and improving their health through access and management of their personal health information is an integral part of controlling costs and improving quality and outcomes. Sixty percent of Americans support the creation of secure, electronic personal health records (PHRs) (Markle Foundation, 2005) and additional research supports the belief that consumer commitment to PHRs would result in increased efficiencies in the health care system, lower overall costs and improved health care information access (Kaiser Permanente Institute for Health Policy Roundtable Summary Report, 2006). Patients using comprehensive PHR systems find increased access to their health information and health care team to be transformative (Tang and Lansky, 2006).

To achieve Objective # 3 the following actions are recommended:

Action Item.3.1 Catalyze Consumer Support for e-Health

- ❑ While opinion polls indicate a high level of support for e-Health activities, consumers remain largely unengaged in the e-Health transformation occurring in health care. Therefore, the Kentucky e-Health initiative must take steps to more actively engage consumers since their involvement is a critical component to achieving a lower cost, higher quality health care system and healthier people.
- ❑ CHFS and the KeHN Board will actively recruit consumer involvement on all committees and subcommittees.
- ❑ The KeHN Board and CHFS will work with the health care and public health communities to inform the public and provide access to information about statewide and community e-Health activities and the value of e-Health. CHFS Internet information sites such as the e-Health site (<http://ehealth.ky.gov>), the Health Care Information Center (<http://chfs.ky.gov/ohp/healthdata>), and Get Healthy Kentucky website (<http://www.gethealthy.ky.gov>) could include links and information for consumers and community groups about e-Health. In addition, KeHN can work with providers to supply e-Health resources to community and local outreach and education groups such as Diabetic education or cardiac recovery groups.

Action Item 3.2 Address Consumers' e-Health Privacy and Security Concerns

- ❑ Building on the work of the Kentucky e-Health Privacy and Security Collaboration and its recommendations, the KeHN Board will form a Privacy and Security Committee that will oversee the development and implementation of legal, regulatory, technological and organizational policies and best practices statewide to ensure the integrity, confidentiality and security of protected health information in an electronic environment.
- ❑ The Privacy and Security Committee of the KeHN Board will be responsible for developing consumer education resources to inform consumers/patients about the privacy and security aspects of e-Health and EHRs/PHRs. Based on the recommendations of the Kentucky e-Health Privacy and Security Collaboration, consumer education resources should include user-friendly information on how consumers can access and manage their health information electronically. In addition, consumer information resources should include user-friendly information on rules governing disclosure of protected health information, the risks of paper versus electronic medical records and the positive aspects of electronic health information exchange.

Action Item 3.3 Assist Consumers/Patients to Locate Providers that Use or Accept EHRs/PHRs and Build Capacity for PHR Development and Use

- ❑ The HIT Adoption committee will be responsible for exploring the emerging role of personal health records (PHRs) in health information exchange and understanding the operational and interoperability issues between clinically-based EHRs and consumer-controlled PHRs.
- ❑ The Health IT Adoption Committee of the KeHN Board will explore a number of options for expanding the use of PHRs in Kentucky. The Board could provide consumers with information about providers and practitioners that utilize HIT systems or accept PHRs. Also, the KeHN Board can explore providing a list of employers offering PHRs for their employees. The KeHN Board could also explore certifying or evaluating currently available PHRs.
- ❑ A goal of the KeHN should be eventually to provide consumer access to electronic health records/personal health records as part of its e-Health offerings. A consumer-accessible EHR/PHR will allow consumers access to their complete, lifetime health information in a manner that is useful and understandable. The KeHN should facilitate consumer-provider communication and allow consumers to access and input information such as:
 - Patient registration information (home address, insurance information, etc.)
 - family medical history
 - allergies and adverse drug reactions,
 - medications (including dose and how often taken) including over the counter medications and herbal remedies,
 - illnesses and hospitalizations,
 - surgeries and other procedures,

- immunizations, and
- laboratory test results.

In addition to allowing an individual's personal health information to be exchanged securely and confidentially, the KeHN should provide added-value services for consumers such as automatic drug interaction alerts, prevention and wellness information, disease management information, and/or secure electronic messaging between patients and providers.

Objective #4 - Foster Increased Use of Health Information Technology

Increasing the use of information technology in health care and public health is vital to ensuring an efficient, high quality health sector. Medical records used and stored in paper form are prone to handwriting errors, missing information and costly manual processes for retrieving and storing information. Without the use of health information technology, the health sector in the United States will continue to lag behind other countries in its efficiency, quality and effectiveness. It is especially important that information technology be used at the point of care.

To achieve Objective # 4 the following actions are recommended:

Action Item.4.1 Incentivize, Reward and Facilitate HIT Adoption

- The costs and risks of HIT adoption and implementation are borne largely by individual providers and practitioners while the benefits accrue to payors, patients and other entities. This reality is a huge barrier to HIT adoption. The KeHN Board will assist providers and practitioners to overcome these barriers through a number of initiatives aimed at incentivizing and rewarding HIT adoption.
- The HIT Adoption committee will recommend various programs and initiatives important to providers and practitioners. The HIT Adoption Committee should work with the Healthcare Infrastructure Authority to research and analyze various innovative ways to assist with the cost of HIT and provide technical assistance needed to implement HIT. Possible programs could include informing the practitioner and provider communities about federal certification and HIT standards; sharing implementation strategies, lessons learned and HIT expertise; facilitating group purchasing, cooperative funding, discount arrangements or application service provider (ASP) models; assistance with locating and obtaining grants; and facilitating and connecting local providers and practitioners to nationwide private sector HIT adoption efforts.
- CHFS and the KeHN Board will develop a recognition program for practitioners and providers that utilize HIT in an innovative way to improve quality and outcomes and contain costs. Awards would be made during the Annual e-Health Summit to highlight and promote innovations and promising HIT uses. The Health IT Adoption Committee will assist with developing this new program.

- CHFS, the KeHN Board and the Healthcare Infrastructure Authority will explore the feasibility of providing incentives or reward payments for the implementation and use of HIT.

Action Item.4.2 Implement Pilot Projects and Grant Programs to Assist with HIT Adoption

- Medical management and e-Prescribing and pilots programs can serve as incremental and practical steps to further HIT adoption. As funding becomes available, the KeHN Board should also support pilot projects especially focused on practice management and medical management to gather lessons learned and foster innovation.
- The KeHN Board should complete the e-Prescribing Partnership in Kentucky (ePPIK) Grant program and distribute findings and recommendations from this project to others interested in implementing e-Prescribing. In 2007, CHFS obtained funds and awarded 5 grants to partnerships of pharmacies and physician practices to implement e-Prescribing (electronic exchange of prescription and patient information between a providers and a licensed pharmacy). This effort should be continued and expanded to encourage e-Prescribing and facilitate the integration of these prescribing systems with existing state systems and with KeHN in the future.
- CHFS, the KeHN Board and the Healthcare Infrastructure Authority should actively seek out partners in the vendor community that can assist and fund health IT adoption. In particular, the Board should work with national initiatives and roll-outs by private sector entities and the federal government to ensure that Kentucky is utilized as a partner to launch national initiatives. The Board will ensure that national actors and initiatives are aware of Kentucky e-Health efforts and will help to coordinate statewide, community and RHIO/HIE participation in pilot projects and national initiatives.

Action Item.4.3 Develop e-Health Resources to Assist Health IT Adoption

- The HIT Adoption Committee will oversee the development of a Health IT Adoption Tool Kit that will bring together the best available knowledge and best practice resources about the process of selecting, purchasing and implementing health IT.
- The HIT Adoption Committee will work with the KeHN Board and the Healthcare Infrastructure Authority to seek private sector seed funding for the “e-Health Center of Excellence,” that would provide vendor-neutral information and best practices about health IT adoption to the provider and practitioner communities. The e-Health Center of Excellence could explore recruiting an expert panel of stakeholders to assist practitioners and providers to perform a needs assessment and workflow analysis, create a customized plan for pursuing HIT, consulting on practice transformation and change management, and troubleshooting, problem solving, sharing best practices.

- ❑ The HIT Adoption Committee should develop a speaker's and advisors bureau of credible e-Health experts, vendors and practitioners that have overseen the implementation of HIT in healthcare facilities in Kentucky who can serve as speakers and provide technical assistance and coaching to the provider and practitioner community on health IT adoption.
- ❑ The HIT Adoption Committee should work with existing health organizations and associations to foster greater educational and networking opportunities among e-Health advocates and innovators, including holding special events such as the Annual e-Health Summit as well as other training opportunities. e-Health Staff should work with various associations to ensure e-Health is a part of their agendas and members of the speaker's bureau are utilized.

Objective #5 - Facilitate and Collaborate With Local HIE Efforts

Most health information exchange needs to occur locally because patients for the most part seek care close to home. However, because people move and travel frequently, electronic health records also need to be portable and interoperable to ensure that health records can be exchanged smoothly regardless of where in the nation or state a person seeks care. Recognizing this reality, the KeHN Board will work with local communities, HIEs and RHIOs to coordinate statewide and community e-Health efforts. The three current RHIO/HIEs in Kentucky have representatives who sit on the e-Health advisory board and these organizations will have additional participation on the KeHN Board committees. The KeHN as envisioned and outlined in Objective #2 will provide the basic technology architecture and functionality to assist state, local and regional efforts and to establish a common operating structure while also allowing pilot programs and projects suited to local needs to flourish and engage local stakeholders and partners.

To achieve Objective # 5 the following actions are recommended:

Action Item 5.1 Assist with Local HIE Development

- ❑ To ensure that the KeHN develops, state and local efforts need to occur in tandem with local HIE efforts focused on leveraging their existing investments and infrastructure to the greatest extent possible. Careful thought and coordination among state and local efforts will allow mutually supportive work without competition for scarce resources. The KEHN Board should work collaboratively with local efforts to assist them in removing barriers to HIE and scaling up and expanding the local effort.
- ❑ Utilizing the findings from the Medical Trading Area Analysis, the KeHN Board will work with local stakeholders and community organizations to coordinate and foster local HIE development. The KeHN Board could assist with convening meetings as stakeholder interest warrants using the e-Health Summit or local venues or organizations as launching points and providing a forum for local leaders to discuss challenges and successes in their communities. As additional RHIO/HIEs develop, representatives from these organizations will be

appointed to the e-Health Advisory Group to ensure appropriate representation and coordination with statewide and other local efforts.

- The KeHN Board will serve as an incubator for local and community efforts, providing best practices, guidelines, resources and technical assistance for business development and governance as well as long-term financial sustainability. The HIE Committee, the Healthcare Infrastructure Authority and CHFS would utilize the KeHN Website as a clearinghouse for existing resources to support regional efforts, information sharing and collaboration and develop new resources as needed.

Action Item 5.2 Share the Statewide HIE Infrastructure and Resources with Local HIEs

- As outlined in Objective #2, the KeHN Board will work with local efforts to coordinate common development of the statewide HIE infrastructure that can be utilized to support and facilitate local HIE efforts. The Health Information Exchange Committee of the Board will explore whether a more formal means of coordination is necessary, such as a state HIE charters or another mechanism, to ensure interoperability and coordination between statewide and local HIE efforts.
- The HIE Committee of the KeHN Board will assist and support efforts to locate and coordinate start-up funding for local HIEs including state general funds, federal funds, foundation grants, private sector seed funding and cooperative business arrangements.

Objective #6 - Collaborate With Nationwide and Interstate e-Health Efforts

As illustrated in the diagram under Objective #2, the KeHN must interact with local RHIOs/HIEs on the one side and it must engage federal e-Health initiatives, particularly the Nationwide Health Information Network (NHIN) on the other side. The current vision for the NHIN foresees a network of networks composed of different HIE implementations at the state and local levels. There is general agreement that the NHIN can accommodate these variations only if the implementations are based on a core set of HIE standards.

Thus, it is imperative for Kentucky's e-Health efforts to utilize national standards for interoperability and to be involved in the national level conversations around e-Health. A study conducted on behalf of the Office of the National Coordinator of Health Information Technology (ONC) that looked at state and national e-Health efforts currently underway concluded that the current informal communication networks that exist are not adequate to foster sufficient awareness and coordination. Kentucky leaders would concur with this finding and want to ensure that state efforts are well-coordinated with nationwide efforts.

The KeHN Board has determined that it will not develop separate Kentucky-based standards for e-Health but will incorporate federal interoperability standards into its e-Health efforts as they become available. Moreover, Kentucky will seek to utilize the findings and recommendations of federal efforts to assist and further its e-Health efforts and prevent duplication or redundancy of

effort. There is an ongoing need for the KeHN Board to monitor and incorporate national HIE and HIT standards with Kentucky initiatives. In addition, the KeHN Board wants to seek opportunities to work with other states to share learning, pool resources and, when feasible, develop joint resources.

Kentucky e-Health leaders are also interested in collaborating with national private-sector efforts to advance e-Health and desire for Kentucky to serve as an innovation lab and pilot area for new public-private partnerships.

To achieve Objective # 6 the following actions are recommended:

Action Item 6.1 Implement Findings and Recommendations from the Kentucky e-Health Privacy and Security Collaboration

- The Kentucky e-Health Privacy and Security Collaboration highlighted the differing standards and legal frameworks for ensuring the privacy and security of protected health information. The recommendations from Kentucky's project include forming a Privacy and Security Committee of the KeHN Board that will be responsible for legal and regulatory changes to align federal and state privacy and security standards to ensure that electronic health information is afforded consistent and appropriate levels of protection across all covered entities.

Action Item 6.2 Integrate Federal Health IT Standards and Certification into State and Local e-Health Efforts

- The KeHN Board must play a major role in communicating, interpreting, and integrating federal HIT/HIE standards for interoperability and certification for state, regional and local levels.
- CHFS and the KeHN Board will work to integrate federal health IT standards and certification into all contracts and statewide e-Health efforts to ensure maximum interoperability with the Nationwide Health Information Network and other state and regional e-Health efforts.
- The Kentucky e-Health website should disseminate information on current federal initiatives and serve as a clearinghouse on federal standards and information for state and local leaders.

Action Item 6.3 Pursue Collaborative Opportunities with Nationwide and Interstate Efforts for Kentucky e-Health Projects and Initiatives

- To ensure Kentucky meets its responsibilities and stays abreast of new developments, Kentucky e-Health leaders and CHFS staff must both monitor and participate actively in national level e-Health activities while also monitoring other state and community e-Health efforts. Staff and leadership should have access to funds for membership in national organizations and attendance at national meetings as appropriate.

- The KeHN Board should pursue existing avenues for collaboration with the federal government on e-Health initiatives including federal grant funding opportunities like the Medicaid Transformation Grant as well as a Medicare Demonstration program or other opportunities.
- Kentucky will seek to have appropriate representation on the State e-Health Alliance and will monitor and participate in meetings of the American Health Information Community (AHIC) and its work groups. Members of the e-Health Advisory Group are appointed currently to participate on AHIC work groups and provide periodic updates on federal activities.
- The KeHN Board and CHFS leadership will also communicate with Congressional leaders about Kentucky's e-Health efforts and provide input into federal legislation and executive branch activities related to e-Health.
- The KeHN Board leadership and CHFS staff should set up meetings with nationwide private sector e-Health leaders to pursue possibilities for collaborative e-Health opportunities in Kentucky with national companies and initiatives.

Objective # 7 – Link e-Health with Economic Development Efforts

For statewide e-Health initiatives to be successful, they must be supported by a strong economic model providing both cost containment and revenue generation opportunities. KeHN should identify and develop linkages to existing adoption efforts or technology initiatives not directly tied to e-Health but that support the e-Health objectives. Additionally, it is equally important that we ensure appropriate e-Health grant funds to supplement our efforts and investments. Finally, KeHN should actively promote opportunities to foster development of health related services and IT companies in Kentucky.

To achieve Objective # 7 the following actions are recommended:

Action Item 7.1 Develop Linkages to Existing Technology Adoption Efforts Within Kentucky

- The KeHN Board will appoint an ad hoc Economic Development Committee to review existing technology adoption efforts and create an inventory for possible inclusion in e-Health initiatives such as ConnectKentucky, the Department of Commercialization and Innovation initiatives, Telehealth and state universities. The committee should also consider or review in-house developed technologies (e.g. eKASPER) that may potentially be leveraged or present a commercial opportunity.

Action Item 7.2 Ensure Appropriate e-Health Grant Funds Come to Kentucky.

- CHFS staff will continue to participate in national level associations and meetings to ensure Kentucky's e-Health efforts are represented and recognized by e-Health leaders.

- The KeHN Board, the Healthcare Infrastructure Authority and CHFS staff should develop a channel for rapid review and response to e-Health grant opportunities. The grant response protocol should also include ways to provide assistance to Kentucky universities, providers and practitioners to take advantage of grants for HIT adoption efforts.

Action Item.7.3 Foster Development of e-Health Businesses in Kentucky

- The Economic Development Committee of the KeHN Board will have the responsibility for creating a plan for coordinating resources and opportunities in Kentucky to support the formation of new or growth of existing e-Health businesses. Included in the plan will be ways to secure funding specific to development of e-Health technologies and also ways to ensure that Kentucky-based businesses and proposals that create jobs in Kentucky are accorded due consideration in the award of grants and contracts by the KeHN Board. The plan may also include facilitating cooperative models for business continuity and disaster recovery, leveraging provider and plan IT networks and capacity and examining broadband availability and other infrastructure needs.

Conclusion

In this e-Health Action Plan, the Advisory Group of the KeHN Board has sought to forward a collaborative long-term strategy for developing a secure, interoperable, statewide e-Health Network. While this Action Plan is intended to guide and provide recommendations to the KeHN Board, the impact of the Plan is intended to be much broader than the Board alone. This Action Plan is intended to serve as guide for local and community action, for private sector participation and for state government leadership.

The next step is for the Board and its committees to utilize this Action Plan to guide their work and make these recommendations a reality. The Advisory Group will also continue its work, adding greater detail and refining each of the objectives and action items listed by adding information such as estimated funding needed, potential revenue sources and timelines for accomplishing each item. In addition, the Advisory Group will also work on a coordinated operations, communications and marketing and evaluation plan for Kentucky's e-Health activities.

There is much work yet to do. But the leaders, experts and practitioners who were involved in drafting this plan believe the time is right to work together to use e-Health to improve the affordability and quality of health care and to advance the health and quality of life of all Kentuckians.

References

Anderson, G.F., P.S., Hussey, B.K., Frogner, & Waters, H.R. (2005). Health Spending in the United States and the Rest of the Industrialized World. *Health Affairs*; 24, 903-914.

Andrews, J.E., Pearce, K., Ireson, C. et al. (2004) Current State of Information Technology Use in a U.S. Primary Care Practice-Based Research Network. *Informatics in Primary Care*. 12, 11-18.

Business Week (2004) A Full-Bodied Talk with Mr. Starbucks. Retrieved on March 14, 2007, from http://www.businessweek.com/magazine/content/04_47/b3909098.htm

The Centers for Disease Control and Prevention (CDC) (2002). , National Center for Health Statistics (NCHS), Compressed Mortality File (CMF) compiled from 1999-2002, Series 20, No. 2H 2004 on CDC WONDER On-line Database. Retrieved on April 13, 2007 from <http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?previewid=3&action=compare&category=Health+Status&subcategory=Cancer&topic=Cancer+Death+Rate+per+100%2c000>

The Centers for Disease Control and Prevention (2005a). Behavioral Risk Factor Surveillance System; analysis by the National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition and Physical Activity. available at <http://apps.nccd.cdc.gov/brfss/list.asp?cat=DL&yr=2005&qkey=4000&state=All>.

The Centers for Disease Control and Prevention (2005b). Behavioral Risk Factor Surveillance System Survey Data, 2005, unpublished data. Retrieved on April 13, 2007 from <http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi?action=compare&category=Health+Status&subcategory=Obesity&topic=Adult+Overweight%2fObesity+Rate>

The Centers for Disease Control and Prevention (2005c). Behavioral Risk Factor Surveillance System, 2005; analysis by the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, available at <http://apps.nccd.cdc.gov/brfss/list.asp?cat=EX&yr=2005&qkey=4347&state=All>.

The Centers for Disease Control and Prevention (2006a). Behavioral Risk Factor Surveillance System Survey Data (BRFSS), 2006. Available at <http://apps.nccd.cdc.gov/brfss/list.asp?cat=TU&yr=2005&qkey=4394&state=All>.

The Centers for Disease Control and Prevention (CDC) (2006b). National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics Reports, Volume 54, Number 19, Table 3. Available at http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_19.pdf.

The Centers for Disease Control and Prevention (2006c), National Center for Health Statistics, Division of Vital Statistics, National Vital Statistics Report Volume 54, Number 13, April 19, 2006, Table 29. Available at http://www.cdc.gov/nchs/data/nvsr/nvsr54/nvsr54_13.pdf.

Cisco Systems, Inc. (2007). One in Three Americans Report that Internet has Changed the Way They Manage Their Health Care, New Study Reports. Retrieved on March 14, 2007, from http://newsroom.cisco.com/dlls/2007/prod_022707b.html

Claxton G, Gil I, Finder B, Gabel J, et al. (2006). The Kaiser Family Foundation and Health Research and Educational Trust Employer Health Benefits 2005 Annual Survey. Retrieved on April 13, 2007, from <http://www.kff.org/insurance/7315.cfm>.

Esterhay R, Thornewill J, Austin R, and Walton P (2006). Advancing the Knowledge of Managing Integrated Electronic Health Network Organizations. University of Louisville School Health Management and Systems Science, paper presented to the Kentucky Science and Engineering Foundation. Retrieved on April 13, 2007, from <http://www.louhie.org/Downloads/KSEF%20Final%20report%20%2020061126.pdf>

Foundation of Research and Education (FORE) of American Health Information Management Association (AHIMA) (2006). State Level Health Information Exchange Initiative Development Workbook: A Guide to Key Issues, Options and Strategies. Retrieved on March 14, 2007, from http://www.staterhio.org/documents/HHSP23320064105EC_Workbook_090106.pdf

Heffler, S., Smith, S., Keehan, S., Borger, C., Clemens, M.K., & Truffer, C. (2005) Trends: U.S. Health Spending Projections For 2004 – 2014. Retrieved on March 14, 2007, from *Health Affairs*, 10.1377/hlthaff.w5.74

Holahan, J. & Cohen, M. (2006). Understanding the Recent Changes in Medicaid Spending and Enrollment Growth Between 2000-2004. Kaiser Commission on Medicaid and the Uninsured. Retrieved on March 14, 2007, from www.kff.org/kcmu

Institute of Medicine (IOM). (2000). *To Err is Human: Building a Safer Health System*. National Academy Press: Washington, DC.

Kaiser Family Foundation. (2007). State Health Facts. Retrieved on April 13, 2007, from <http://www.statehealthfacts.org/cgi-bin/healthfacts.cgi>

Kentucky Medical Association (KMA). (2005). The Kentucky Medical Association Report on the Use of Electronic Medical Records by Kentucky Physicians.

Lago, R., Aspling, D., & Westert, G. (2005) Current and future developments in managed care in the United States and implications for Europe. *Health Policy and Research Systems*, 3. Retrieved on March 13, 2007 from <http://www.health-policy-systems.com/content/3/1/4>

Medical Expenditure Panel Survey (MEPS). From: Justification for Budget Estimates for Appropriations Committees, Fiscal Year 2000. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/about/cj2000/cjmeps00.htm>.

OECD Observer. (2006). *OECD in Figures, 2006 – 2007*. Retrieved on March 14, 2007, from http://www.oecdobserver.org/news/printpage.php/aid/1988/OECD_in_Figures_2006-2007.html

Schaffer, R. (2005). *Understanding Globalization: The Social Consequences of Political, Economic, and Environmental Change*. New York: Rowman & Littlefield.

U.S. Census Bureau. (2007). Retrieved on March 14, 2007, from <http://www.census.gov/>

World Health Organization (WHO). (2007). Retrieved on March 14, 2007, from <http://www.who.int/en/>

Yasnoff, W.A. (2004). National Health Information Infrastructure (NHII): Tutorial. Retrieved on March 14, 2007, from <http://health.state.mn.us/e-health/yasnoff072004.pdf>.

Appendix A : Minnesota e-Health Initiative Consumer Benefit Statements for e-Health

Consumer Benefit Statements by Strategic Goal

Goal 1: Informing Clinical Practice—Electronic Health Records

- I save time and worry because there is no need to fill out lengthy forms or explain my health history (and possibly forget something important) every time I see my healthcare provider.
- I increase the likelihood of receiving the care I need.
- My healthcare will be safer because my provider will have the right information to help make better decisions.
- My electronic health record can be encrypted and backed up, so it would be protected, yet accessible by my doctor, even after a disaster that would have destroyed my old paper record.
- My information will always be available so I don't need to bring my medical records with me to doctor appointments to ensure that I receive appropriate, high quality care.
- My healthcare will be more affordable because I won't have to spend extra time and money to re-take tests and x-rays unnecessarily.

Goal 2: Interconnecting Clinicians—Health Information Exchange

- All of my healthcare providers (primary doctor, nurse, etc.) have health information about me that is available without the time delay and risk of transporting paper records. (Example information: medications taken, health history, and lab results.)
- It is easier for me to move from one provider to another.
- Ready access to my information will improve communication and coordination of care among my caregivers. (That is, my doctor can read about my visits to the specialist last week or last year.)
- Time will not be lost in an emergency while ER staff reconstructs my medical history.
- No matter where I go to the doctor, my providers have health information about me.
- I have the best possible disease protection in the case of community-wide outbreaks or natural disasters.

Goal 3: Personalize Care—Personal Health Records

- I have convenient and secure access to my personal health information.
- I have the information I need, whenever I need it, to help my children and elderly parent who rely on me for health decisions.
- I can ask good questions and am able to make better healthcare decisions for my children, my elderly parent, and me based on pertinent, personalized information.
- I can record my health history and set reminders to help me monitor and take responsibility for my healthcare, particularly my chronic conditions.
- I get test results quickly and can understand them.
- I am aware of potential drug interactions with the medications that I am taking.
- My electronic "clipboard" with my recent health information can be used by all of my healthcare providers.
- I can use e-mail to securely ask my physician confidential health questions.
- I keep tabs on the health information contained in my record and provide updates when needed.

Goal 4: Population and Public Health—Public Health Information Network

- I have greater confidence that, because public health agencies and healthcare providers are connected electronically, they can communicate more easily and respond quicker in the event of a health emergency.
- Since we are better informed about public health issues in our community, my neighbors and I are healthier because diseases and other risks are prevented, healthy behaviors are supported, and environmental health hazards are reduced.
- I am supported in taking responsibility for my health and wellness by the prevention and wellness resources that are available electronically in my community.
- I have support from programs and other electronic resources that help me in caring for my health.

Source: Minnesota e-Health Initiative Advisory Committee, *Emerging Themes and Preliminary Recommendations for Action*. June 29, 2006.

Appendix B: Personal Health Record Definitions

The types of Personal Health Record (PHR) storage platforms include: paper, personal computers, the internet, and portable devices.

Paper-based PHRs: Personal health information is recorded and stored in paper format. Printed laboratory reports, copies of clinic notes, and health histories created by the individual may be parts of a paper-based PHR. This method is low cost, reliable, and accessible without the need for a computer or any other hardware. Paper-based PHRs may be difficult to locate, update, and share with others. Paper-based PHRs are subject to physical loss and damage, such as can occur during a natural disaster. Paper records can also be printed from most electronic PHRs.

PC-Based PHR: Personal health information is recorded and stored in personal computer-based software that may have the capability to print, backup, encrypt, and import data from other sources such as a hospital laboratory. The most basic form of a PC-based PHR would be a health history created in a word-processing program. The health history created in this way can be printed, copied, and shared with anyone with a compatible word processor.

PHR software can provide more sophisticated features such as data encryption, data importation, and data sharing with health care providers. Some PHR products allow the copying of health records to a mass-storage device such as a CD-ROM, DVD, smart card, or USB flash drive.

PC-based PHRs are subject to physical loss and damage of the personal computer and the data that it contains. PC-based PHRs may be vulnerable to unauthorized access via Internet or other data connections. The encryption of personal health information is a valuable feature, as is a firewall.

Internet-Based PHR: Personal health information is accessed and edited via a Web browser. The data is stored on a remote server. Internet-based PHRs may have the capability to print information, backup data, import data from other information systems, and share information with health care providers.

Internet-based PHRs are subject to physical loss and damage of the Web server. Internet-based PHRs may be vulnerable to unauthorized access via Internet or other data connections. Internet-based PHRs have the advantage of being accessible from any location with an Internet connection with a suitable Web browser.

Portable-Storage PHR: Personal health information is recorded and stored on a portable-storage device such as a CDROM, DVD, smart card, or USB flash drive. Some portable-storage PHRs provide features such as history editing, data encryption, data importation, and data sharing with health care providers.

Portable-storage PHRs are subject to physical loss and damage of the storage device. One of the disadvantages of portable-storage PHRs is that many computers at physician offices and hospitals cannot read and update these PHRs.