

ACCEL Health Information Exchange
Business Case
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Healthcare Technology
Management Services

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I. Executive Summary

The woes of the healthcare industry are oft-described and well-known. Among them include: health costs rising at a rate greater than inflation; fragmentation of care; concerns about care quality and medical errors; and a growing uninsured population, many who receive only sporadic care. Seemingly every decade there is a new thrust of change intended to ease these concerns.

Development in the application of information technology is the next great hope for addressing many of these issues. A healthcare system where information could be securely and readily exchanged electronically could promise to create efficiencies, reduce medical errors, improve the quality of care, and prevent those with no or sporadic insurance coverage from slipping through the cracks.

Whether these goals will actually be realized, and whether information can be securely and readily exchanged are questions that are currently being tested by leaders in the industry. The potential promise, however, is so great that the federal government and many states have set aside millions of dollars to support the development of a technological infrastructure to help achieve these goals.

El Dorado County, as a forward-thinking county in central California, is exploring the possibilities that such a network, or Health Information Exchange (HIE), could have for its residents. This document explores the history of these types of exchanges, and describes how one could be applied in El Dorado County. Further, the document describes the technological and financial implications for such an undertaking. Finally, the document offers next steps to be considered in moving forward on the development of a HIE.

Key Findings:

- **County health status:** While El Dorado County has a more homogenous population than many others in California, it ranks in the middle of counties for most demographic and health status measures such as infectious disease, and chronic disease. There is significant opportunity for improvement in both categories.
- **Functionality:** The ACCEL HIE has elected to implement core functionality as has been decided by the California Regional Health Information Organization, CalRHIO. Even so, these categories for data exchange will need to be prioritized and implemented in a phased and measured way.
- **Technology Solutions:** Technology solutions are numerous and diverse. There are several core models, but most options offer some kind of hybrid that is specific to a region's particular needs. Costs for these solutions vary from the \$200,000 to \$2,000,000 range, making it particularly important for the county to understand the scope of its requirements and the associated costs.

- **Costs:** Because the initial functionality and phasing schedule have not yet been determined, and because a vendor has not yet been selected, cost estimates are still very high level. Estimates including incremental labor expenses, vendor fees, and additional technology costs suggest that the project will require approximately \$1.2M in the first year, \$1.6M in the next two years, and \$.4M in the final year of implementation.
- **Revenues/Savings:** Every HIE has developed a revenue model based upon the circumstances of its own particular region. Because the key stakeholders in El Dorado County will be implementing Electronic Health Records on their own, savings associated with EHRs may not be counted as part of the HIE. In general, HIEs are not expected to produce a positive return on investment in the first years, due to high development costs and future-oriented savings.

In order to determine new revenue and savings opportunities, the ACCEL Financial Advisory team, comprised of financial leaders in stakeholder organizations, applied a rigorous approach to identifying and prioritizing opportunities. The ACCEL HIE has divided its revenue/savings opportunities into two categories:

- **Short-term:** Those opportunities that could produce new revenue and/or cost savings during the first four years of the project. These include:
 - **Stakeholder subscription fees:** Contributions made by participating stakeholders to support funding of the HIE.
 - **Stakeholder transaction fees:** While executing this option must still be assessed for strategic and other implications, some stakeholders, such as outside ancillary providers, may be willing to pay a transaction fee for accessing the HIE, as they have an opportunity for short term savings.
- **Long-term:** There are numerous additional possibilities for long-term new revenue and savings opportunities that have been categorized as strategic or long-term in nature because they cannot be readily documented in a four year financial model. These include:
 - **Improved public health surveillance:** This could assist with earlier and more targeted response to a range of unlikely but high impact scenarios, such as natural disaster, bio-terrorism, and outbreak of infectious disease.
 - **Pay for performance:** By pooling data, the HIE participants may be able to better document trend information in their ability to manage health conditions, respond to health issues, and improve care quality. The group may be able to negotiate higher reimbursements based upon performance collectively rather than as independent entities.

- **Care Pathways:** This case management program in El Dorado County will be implemented using a software tool in 2007. The program has the potential for additional savings and quality outcomes as the HIE enables data exchange between the Care Pathways application and stakeholder IT systems.

II. About this document

The business case was developed by ACCEL with consulting support by Healthcare Management Technology Services (HTMS), in collaboration with the ACCEL Financial Advisory Team. It is intended to provide an overview of the patient care, business, and financial implications of establishing a Health Information Exchange (HIE) in El Dorado County.

Preliminary research of other HIEs revealed that we were unlikely to arrive at a positive Return on Investment (ROI) given the geographical scope of the HIE and because EHR solutions were already being deployed by participating stakeholders, meaning much of the savings opportunities sometimes attributed to an HIE would be counted as part of other initiatives.

While the vast majority of HIEs result in a negative ROI, the tremendous emergence of HIE initiatives and the funding to build and sustain them indicates that there is a deep-rooted belief that HIEs have the potential to dramatically improve patient care and efficiency of care delivery. ACCEL and the El Dorado County collaborative share this belief and have developed this business case to summarize the benefits, short term and long term, including those that can be quantified and those that may not be tracked. This document also estimates expected costs associated with building and maintaining the HIE. Combined, it is intended to provide a directional picture of the benefits, costs, savings, and new revenues that the HIE will bring to El Dorado County. Further analysis must be undertaken for more detailed outcomes once critical decisions have been made about critical items such as scope, participation, and technology.

III. Background

A. Context

Rising healthcare costs coupled with questions regarding quality and efficiency continue to make healthcare an important issue for Americans. According to a November 2006 poll by the Kaiser Family Foundation, Americans cite healthcare as a critical issue for the president and Congress to act on in the next year, following only Iraq and economic issues.¹

While recent trends show a deceleration in healthcare inflation, from 9.1% in 2002 to 7.4% in 2004, with a total average of 7.2% over the next decade, this amount is still projected to be 2.1 percentage points higher than predicted growth in gross domestic product (GDP) during the same period. With this trend, health care's share of GDP is projected to rise from 16% of GDP in 2004 to 20% in 2015.²

These rising costs will continue to strain the payers, providers, purchasers, and consumers of health care. A number of interventions are in place to curb this projected growth, such as higher deductible plans, the onset of Health Savings Accounts, and more targeted disease management programs. However, these interventions are not broad enough in scale to adjust for other confounding costs such as rising unit costs for hospital and physician services, pharmaceutical spending, and the expected rise in long-term care.³

Within this environment, there has been a spur of recent activity exploring how information technology (IT) can improve care while assisting in arresting this cost trend. In 2004 President Bush appointed David J. Brailer, MD, PhD, to serve as the first National Coordinator for Health Information Technology. This position provides counsel to the Secretary of Health and Human Services and leadership for the "development and nationwide implementation of an interoperable health information technology infrastructure."⁴ The goals of this national effort include:

- Improve health care quality;
- Prevent medical errors;
- Reduce health care costs;
- Increase administrative efficiencies
- Decrease paperwork;
- Expand access to affordable care;
- Offer early detection of infectious disease outbreaks around the country;
- Improve tracking of chronic disease management; and

¹ "The Public's Health Care Agenda for the New Congress and Presidential Campaign." The Kaiser Family Foundation/Harvard School of Public Health, December 2006.

² Borger et al., "Health Spending Projections Through 2015: Changes on the Horizon." Health Affairs. Web Exclusive, February 2006.

³ Borger et al., February 2006.

⁴ US Department of Health & Human Services website (<http://www.hhs.gov/healthit/onc/mission>)

- Evaluate health care based upon value enabled by the collection of de-identified price and quality information that can be compared.⁵

While regional initiatives have been underway in varying forms for some time, the launch of this effort at the federal level has offered both fuel and access to more funding for Health Information Exchanges (HIEs). Many states have picked up this call and are organizing a state-level initiative. In some cases the state may consider launching its own IT infrastructure. In others, it may serve as a means of integrating the multiple regional efforts at play.

California has been a leading state in this undertaking. The California Regional Health Information Organization (CalRHIO) was established in early 2006 to “improve the safety, quality, and efficiency of healthcare through the use of information technology and the secure exchange of health information.”⁶ To this end, CalRHIO is supporting an incremental approach and is serving as a resource for local initiatives that are implementing their own HIEs.

B. Challenges to HIEs

While the momentum of HIEs makes them seem to be an inevitable destination on the healthcare horizon, there are still numerous challenges to be overcome. These will need to be addressed at a high level with governmental action, industry self-regulation, and effective education and communication. They will also need to be managed at the local level by regional initiatives that will need to orient their populations to new ways of thinking about healthcare.

- **Technology:** While IT vendors are secure in selling software, hardware, and services to enable health information exchange, these products are still experimental in their execution. Successful operating HIEs are few and far between and often face limitations with performance and usability. Solutions will need to continue to advance for long-term, broad scale penetration.
- **Costs:** While it may be intuitive that HIEs will result in health cost savings, these savings may not accrue to the investors and may be difficult to identify or document. Given the complexity of health care data, the fragmentation of the health system, the antiquated nature of much of healthcare IT, and the still manual nature of much of healthcare administration, the costs of implementing an HIE are significantly greater than key stakeholders may be able to pay. ACCEL has explored new revenue and savings opportunities, but these are unlikely to support the cost of establishing an HIE.
- **Privacy:** While facilitating data exchange may improve care and efficiency for providers and the system, some patients may not feel comfortable with having their healthcare information accessible electronically. HIE proponents often compare this mindset to the public’s previous uncertainty and now enthusiasm for accessing financial data online. However, health data is considered more

⁵ US Department of Health and Human Services website (<http://www.hhs.gov/healthit/>)

⁶ CalRHIO website (<http://www.calrhio.org/?cridx=201>)

private by many, and with greater consequences for privacy violation. Any viable infrastructure moving forward must allow for opt out and security layering at the individual level.

- **Security:** Many of the security concerns may be unfounded due to the advanced nature of digital security today. Still, occasional security breaches that do occur could have dire consequences.
- **Entrenched behaviors:** There seems to be almost universal consensus that the current healthcare system is flawed. Still, changes to how people seek, access, deliver, and pay for care are often met with considerable resistance. These changes will affect patients and providers both personally and financially, often in unpredictable ways.

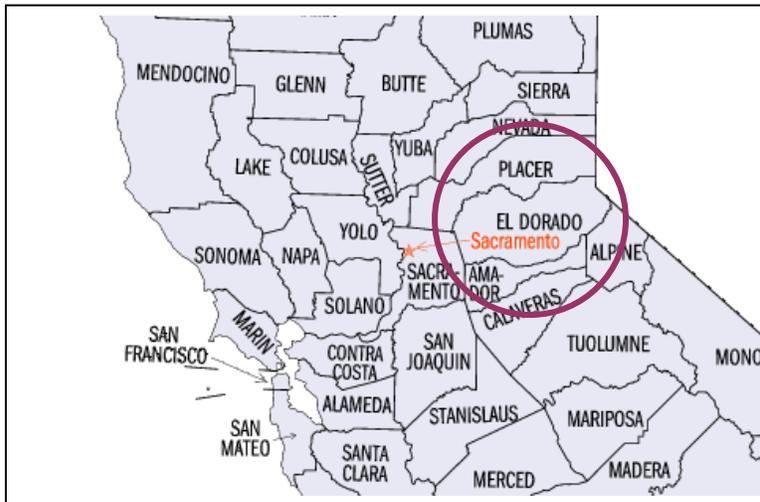
These factors will prove to be important considerations when moving forward with developing and implementing an HIE.

IV. El Dorado County

A. Geography

El Dorado County is a rural county that lies between the urban Sacramento area and mountainous Lake Tahoe, with a population of ~ 170,000.⁷ The county is divided by Sierra Mountains, which separate the Eastern and Western Slopes. The Western Slope borders Sacramento County and shares some medical resources with this dense population. The Eastern Slope's primary population center is South Lake Tahoe. While El Dorado County is considered a rural county, with two relatively small population centers, and with only 40% of the population density of the rest of the state⁸, this data can be misleading. Because of extremely low population in the mountains themselves, the more populated areas of the county are denser than the statistics reflect.

This geography is significant in the delivery of healthcare services for the county. The two slopes share public resources, including the Departments of Public Health and



Mental Health, Medi-Cal reimbursement methodology, and a county-run ambulance program. However, given the geographical barrier, the two slopes rarely share patients. Spillover of the patient population tends to move outside of the county, toward Sacramento on the West and towards Nevada on the East.⁹

Demographics

The population of El Dorado County tends to be less diverse than that of California overall. The population is primarily Caucasian with smaller percentages of persons reporting themselves to be Black, Asian, Hispanic, and foreign born than reported by Californians as a whole.

El Dorado County ranks in the middle among California counties in the percentage of college graduates, level of household income, and median value of owner-occupied housing units, suggesting a population that is not wealthier or poorer than that of the state overall.¹⁰

⁷ (http://city-data.com/county/El_Dorado_County-CA.html)

⁸ US Census Bureau, State & County QuickFacts, 11/14/2006
(<http://quickfacts.census.gov/qfd/states/06/06017.html>)

⁹ Map Source: US Census Bureau (http://quickfacts.census.gov/qfd/maps/california_map.html)

¹⁰ US Census website.

B. Health Status

The population’s health status ranks roughly in the middle among counties for all conditions combined, beating the state average in about half the incidence of tracked health status indicators, and falling short of the state average in the other half. In general, El Dorado County (EDC) had fewer deaths than the state average from homicide, coronary artery disease (CAD) and stroke, diabetes, sexually transmitted diseases, and in some infant, child, and prenatal care. EDC performed worse than the state average in accidents, cancers, hepatitis C, prenatal care, and infant low birthweight.

While this data, detailed in the table below, provides a snap shot of EDC population health indicators in a year’s time, it does not necessarily reflect the ongoing health status of the county for several issues:

- **Random fluctuation:** Disease incidence within a population fluctuates from year to year. The lower the number of incidents for a particular condition, the more likely it is subject to random fluctuations. Given the low incidence of many conditions listed in the table below, the trend data is inevitably influenced by this fluctuation and may not reflect the true ongoing burden of these conditions to the county.
- **Statistical significance:** For some of these conditions the differing rates between counties are quite similar. These counties are still ranked according to their reported outcomes, although the variation in results may be small enough to be due to random fluctuation rather than true population trend, making the results not statistically significant. *Rates that are considered to be unreliable for this reason are noted with an asterix (*)*.

Even with the challenge in determining true population health trends, this table is a snap shot that can provide directional information on where interventions might be targeted to improve the county’s overall health.

Condition ¹¹	CA Rate	CA Rank	EDC Rate	EDC Rank	EDC vs. CA	Page
Death - all causes	704.5	18.5	728.6	23	-	11
Death - motor vehicles	12.1	14.5	14.6	21	-	13
Death - unintentional injuries	29.3	14.5	32.6	17	-	15
Death - firearm injury	9.4	26.5	10.3*	30	-	17
Death - homicide	6.7	47.5	2.3*	15	+	19
Death - suicide	9.4	17.5	12.1	32	-	21
Death - all cancer	164.1	16.5	178.6	34	-	23
Death - lung cancer	41.8	12.5	45.7	25	-	25

¹¹ “County Health Status Profiles 2006,” California Department of Health Services and California Conference of Local Health Officers.

Death - female breast cancer	22.8	31.5	25.3	43	-	27
Death - coronary artery disease	164.7	41.5	145.5	25	+	29
Deaths - stroke	52.4	25.5	46.5	14	+	31
Deaths - drug-induced	10.0	24.5	12.6	37	-	33
Deaths - diabetes	21.3	35.5	11.9	4	+	35
Reported - hepatitis C	.13	38.5	1.59*	51	-	37
Reported AIDS, age 13+	13.29	53.5	2.6*	15	+	39
Reported tuberculosis	8.71	48.5	1.19*	15	+	41
Reported - chlamydia	324.31	44.5	125.3	14	+	43
Reported - syphilis	3.43	55.5	.2*	25	+	44
Infant mortality	5.3	31.5	4.6*	24	+	47
Low birthweight infants	6.6	42.5	6.7	43	-	57
Births - adolescent mothers	39.2	37.5	18.8	5	+	59
1 st trimester prenatal care	13.0	17.5	12.5	15	+	61
Adequate prenatal care	78.3	13.5	70.7	40	-	63
Breastfeeding	83.7	42.5	90.0	19	+	65
Children in poverty	19.6	33.5	9.5	4	+	67

Note: Rates marked with an asterisk are considered to be unreliable (relative standard error >/= 23%)

Chronic health conditions continue to be a key driver of medical costs, and therefore are also an opportunity for savings. Currently almost half of Americans live with a chronic health condition, accounting for about three quarters of all healthcare spending. The impact is especially intense for individuals with more than one chronic condition. In 2002 almost 20% of California’s population had more than one chronic condition, accounting for 60% of the state’s health spending.¹²

The primary four conditions that drive costs in California are heart disease, diabetes, hypertension, and COPD/asthma. Caring for those with these conditions costs significantly more than caring for the general population, with heart disease topping the chart at five times that of those without a chronic condition.¹³

Condition ¹⁴	Prevalence	% of Population	Annual Cost Per Capita
Hypertension	6.0 million	24%	\$7,200
COPD/Asthma	3.2 million	12%	\$5,600
Heart Disease	1.8 million	7%	\$12,900
Diabetes	1.7 million	7%	\$7,900

¹² Anderson, Gerard F., Ph.D. and Katherine B. Wilson. “Chronic Disease in California: Facts and Figures.” California Health Care Foundation, October 2006, p. 6.

¹³ Anderson and Wilson, p. 7.

¹⁴ Table Content from: Anderson and Wilson, pp. 7, 11.

In California, adults living in rural counties are more likely to have one or more chronic conditions than those living in metropolitan areas. In El Dorado County, 45.8 - 47.8% of the population has at least one chronic health condition.¹⁵ Based upon 2002 data for Medicare beneficiaries, the more chronic conditions a patient has, the greater chance there may be of preventing unnecessary hospitalization. These figures reflect an opportunity for improving the population health.

Number of Chronic Conditions	Preventable Hospitalizations (as a percent of total hospitalizations for this condition/s) ¹⁶
One	3%
Two	9%
Three	21%
Four	40%

This data on incidents of both infectious disease and chronic health conditions must be viewed with a degree of uncertainty. The EDC Department of Public Health indicated that its epidemiological and surveillance capabilities are limited. As such, one of the goals of the HIE is to institute improved monitoring capabilities to better assess the disease burden of the population.

C. Healthcare Market Overview

1. Provider Environment

a. County Services:

Department of Public Health: Provides a core set of services for the population at large. These include:

- Public Health Clinics (in Placerville and South Lake Tahoe): Offering a limited number of health services, including health screenings, family planning services, infectious disease testing, immunizations, and senior assessments.
- Alcohol and Drug Treatment Services as contracted through community agencies.
- Community Health Programs and Services, such as smoking cessation, tobacco prevention, and child safety and prevention programs.

Department of Mental Health: Provides mental health services for the community, including patient rights, peer counseling, outpatient services, psychiatric services, day treatment and homeless programs, and day rehabilitation.

ACCEL: El Dorado County health officials & other health industry leaders have been concerned about the problem of access to health care for quite some time. In 2002,

¹⁵ Anderson and Wilson, p. 10.

¹⁶ Table Content from: Anderson and Wilson, p. 38.

the El Dorado County Board of Supervisors convened the Health Alliance to undertake a community needs assessment & to develop recommendations for a health initiative to be funded by Tobacco Master Settlement dollars. In 2002, the Public Health department leveraged these committed funds by applying for and receiving a Healthy Communities Access Program (HCAP) grant earmarked for improving access to medical care for individuals, particularly children and the uninsured in El Dorado County. ACCEL (Access El Dorado) was formed shortly thereafter to bring all of these efforts together under one umbrella initiative. ACCEL's mission is to make EDC a "healthier community by uniting, maximizing, connecting, and focusing our health resources."

ACCEL's initial multi-faceted work efforts included working with providers to reduce the barriers to care for the publicly insured, and to increase clinic capacity through clinic redesign, rural clinic expansion and a new Federally Qualified Health Center (FQHC). ACCEL has developed an outreach, enrollment and retention program to assist individuals to enroll in low and no cost public health insurance, as well as in securing a 'Gap' insurance product for children up to 300% of federal poverty level (FPL) who did not qualify for public insurance. Additionally, ACCEL has conducted a demonstration Health Risk Assessment / health screening project with small businesses in an effort to elevate healthy lifestyles and decrease risks to employee health.

In 2004, ACCEL was awarded a one-year planning grant with the Agency for Health care Research & Quality (AHRQ) to develop a plan for improving the health care quality in our community through the application of information technology. As a result of that effort ACCEL was invited to submit and was subsequently awarded funding to support a multi-year proposal to connect, countywide, our disparate Health Information Systems. Through this connectivity ACCEL will: a) enable and support a new patient centered (systems change) program called Care Pathways, and b), aggregate information from disparate sources, to create a county wide Health Information Exchange.

ACCEL is a county-wide collaborative, including representatives from the prominent health organizations in the county. The El Dorado County Department of Public Health has served as the coordinating agent for ACCEL.

b. Private Providers

Barton Health System

Barton Health System is a community-based, independent, non-profit organization, which includes a number of facilities, including Barton Memorial Hospital, several clinics, medical centers, and physician practices, and a skilled nursing facility. The hospital has 76 beds and serves the Eastern slope of the county as well as the ski resorts located in or near South Lake Tahoe, such as Kirkwood, Sierra-at-Tahoe, and Heavenly.¹⁷

¹⁷ <http://www.bartonhealth.org>

Marshall Medical Center

Marshall Medical Center is also a community-based, independent, non-profit organization, including Marshall Hospital, a hospital with 91 beds in Placerville that serves the Western slope of the county. In addition to the hospital, Marshall includes outpatient facilities, primary care physicians, some affiliated specialists, and community health programs.

El Dorado County Community Health Center

The El Dorado County Community Health Center provides medical and social supportive services to all who need them with specific focus on the uninsured, Medi-Cal, Medicare and under-insured. Physicians, Nurse Practitioners and Physician Assistants, Psychologist, and Client Advocate see clients from birth to centenarians, serving ~4200 patients per year. Clients who are uninsured pay a sliding scale fee according to their ability to pay. Center clients are hospitalized at Marshall Hospital when needed and obtain services of the Marshall Medical Center's diagnostic and other services.

Shingle Springs Tribal Health Program

This community clinic provides modern medical services and shows respect for traditional medicine and ethnic beliefs. Located in Shingle Springs, CA, it serves close to 1500 patients per year for basic medical and dental services.

Physicians

There are approximately 265 practicing physicians in the county. However, many of these with privileges at one of the two hospitals may only be called upon for occasional consult and are not regular staff. There are about 40 physicians regularly practicing at Barton and about 100 at Marshall, suggesting that there are approximately 140 regularly practicing physicians in the county, with the vast majority of these being primary care.

2. Payer environment

The county serves residents covered by private insurance, Medi-Cal, Medi-Care, and those that are uninsured. There is not a significant HMO presence in the county. Most residents have PPO insurance through one of the major carriers in the state: Blue Cross, Blue Shield, PacifiCare, and HealthNet. Those with Kaiser or other HMO coverage often work and/or seek care outside of the county.

V. Community Collaborations - History and context

A. Community Collaboration Activity

While the data documenting the severity of chronic health conditions for both population health and health expenditures are significant, there is still no dominant broad-scale intervention in effect to reverse these figures. Instead, numerous entities within the health payer-delivery continuum have designed programs aimed at improving these statistics. Because of the fragmentation of healthcare delivery, single source interventions are unlikely to have the desired impact. Increasingly, stakeholders are coming together at the regional level to collaborate to improve local care. These collaborations, involving purchasers, plans, providers, patients, politicians, and public health officials, are able to share information and aggregate resources for more effective results.¹⁸

Regional health collaborations are still in their nascent stages, so there are not significant outcomes data to define the necessary components of an effective intervention. Still, program design and learning to date have centered on four common strategies:

- **Data sharing for performance management:** Stakeholders must overcome organizational barriers and share data to offer a more complete perspective on patient outcomes and provider performance.
- **Engaging consumers:** Provide consumers with more information on their health conditions and provider quality so that they make more informed decisions.
- **Improving healthcare delivery:** Through tools and support for quality improvement and through creating provider networks, aid providers in offering higher quality and more cost-efficient care.
- **Aligning benefits and finances:** Design health benefits for consumers and reimbursement for providers that provide incentives for higher quality and more cost-efficient care.¹⁹

Most successful collaborations engage some combination of these strategies, with the data sharing as a foundational element that enables the other three. In this way, creating the opportunity for clinical data exchange, measurement, and monitoring becomes a foundational capability for broader regional interventions to improve the health of a community.²⁰

B. Health Information Technology Collaborations

There has long been recognition of the potential power of improved information technology to improve care and efficiency of healthcare delivery. Historically, the complexity of healthcare data, the lack of integration and collaboration among players on the health care delivery chain, the astronomical costs associated with technological

¹⁸ Wagner, Ed, et al. "It Takes a Region: Creating a Framework to Improve Chronic Disease Care." California Healthcare Foundation, November 2006, pp. 4-5.

¹⁹ Wagner et al. pp. 5-6.

²⁰ Wagner et al., p. 24.

infrastructure, technological limitations, and failed incentives have led many attempts at technological improvement to failure or limited in impact.

In the early 1990s, the first steps at exchanging information began with Community Health Information Exchanges (CHINs). CHINs were unsuccessful for a variety of reasons, including technological limitations such as large central data-warehouses and connectivity costs.²¹ While there are a few successful surviving CHINs, such as the Utah Health Information Network (UHIN), most were eventually disbanded.

The proliferation of Internet technology has enabled a new technology and business model for exchanging health information. Regional Health Information Organizations (RHIOs) emerged in the early 2000s so that communities could begin exchanging health information. These organizations establish the governance, direction, goals, funding, and collaborations to enable Health Information Exchange (HIE).

RHIOs have several advantages over the previous CHINs. The Internet has not only provided a more efficient means to exchange information. It has also made providers and other stakeholders more comfortable with technology in general, and more likely to believe in a technology-driven solution. Additionally, the national focus on safety, especially with the Institute of Medicine report, “Crossing the Quality Chasm,” there is increasing awareness of medical errors and variation in the practice of medicine and the role that technology could play in improving these issues.²²

As healthcare tends to be a regional pursuit, so is the movement toward HIE. In 2005, there were approximately 100 RHIOs in the US. In 2006, more than 200 were identified.²³ RHIOs provide the local infrastructure and governance to enable stakeholders to exchange health information. These networks are likely to roll up into broader exchanges, eventually into the National Health Information Network (NHIN).

Each RHIO is comprised of a unique set of stakeholders, working toward a vision tailored to each community’s particular objectives, market, and capabilities. Numerous interviews with experts, RHIO participants, and vendors, referred to the same phrase commonly used within the HIE community: “Once you’ve seen a RHIO, you’ve seen a RHIO.”

Because the term RHIO usually refers to an organizational entity responsible for the collaboration, the term does not yet apply to the EDC initiative. As the ACCEL HIE gains traction the governance and organizational issues may evolve as well.

²¹ Glaser, John, Ph.D., “Health Information Exchange (HIE) Business Models: The Path to Sustainable Financial Success,” Deloitte Center for Health Solutions, p. 4.

²² Goedert, p. ?.

²³ Goedert, Joseph, “Are RHIOs for Real?” Health Data Management, February 1, 2006.

VI. ACCEL Health Information Exchange

A. Vision/Functionality

The ACCEL Health Information Exchange (HIE) will provide a county-wide system to coordinate patient information and enhance public health surveillance through the collection and coordination of accurate and timely aggregate health data. The project will allow a streamlined patient registration process and ensure that information remains confidential over a secure network to authorized healthcare providers. Sharing information will be based upon signed authorization and release by the patient. The project’s eventual goal is to link this network to the CalRHIO HIE.

ACCEL has identified a broad set of outcomes that it hopes to achieve with the HIE. These include improving treatment efficiency, stakeholder satisfaction, process efficiency, and community health. Each of these outcomes has been further described to reflect its impact upon the quality of care, financial opportunity, and community impact. (See Opportunity List on page 25)

	Quality	Financial	Community
Treatment Efficiency	<ul style="list-style-type: none"> •Better respond to medical emergencies •Reduce the frequency of negative drug interactions •Improve interdisciplinary case management •Move toward more standard practices of care (evidence-based medicine) 	<ul style="list-style-type: none"> •Reduce duplicative services •Reduce costly errors •Provides treatment at earlier, and less costly, intervention points 	<ul style="list-style-type: none"> •Improved health for the community
Improved stakeholder satisfaction	<ul style="list-style-type: none"> •Better consumer engagement in their care •Improved physician satisfaction 		<ul style="list-style-type: none"> •Employers benefit from healthier employee base •Better retention of physicians in the county
Process Efficiency	<ul style="list-style-type: none"> •Easier access to lab, radiological, pharmaceutical results and history 	<ul style="list-style-type: none"> •More and different revenue opportunities •Single entry of patient history and medical data •Achieving higher reimbursement on pay for performance contracts 	<ul style="list-style-type: none"> •Smoother flow of information among community
Community Health	<ul style="list-style-type: none"> •Improves public health surveillance capabilities •Earlier identification of acute infections and outbreaks 	<ul style="list-style-type: none"> •Facilitates steering uninsured patients toward coverage options 	<ul style="list-style-type: none"> •Supports the opportunity for better county-wide program management

In order to achieve these outcomes, ACCEL envisions a rich data sharing environment. The key functionalities that will eventually be included in the ACCEL HIE include:

- Deploy a county-wide Master Patient Identifier (MPI)
- Implement the interfaces to exchange relevant information between hospitals, clinics, the County Public Health and Mental Health Departments, ancillary services providers, physicians, and other stakeholders to be identified.
- Implement a county-wide common patient authorization form that decreases time of registration for new patients and providers.
- Apply public health rules engines to data to identify outbreaks and enable earlier intervention.

- Eventually work with partners to implement a personal health record that can be accessed by patients and providers (long-term strategic goal).

The ACCEL Provider Capacity Team met to determine what data would need to be exchanged to enable this vision. As a starting point, the group used a Clinical Data Set that was identified nationally, and adopted locally by CalRHIO as the basic recommended necessities of identifiable data which would be exchangeable on a national health grid. ACCEL HIE will adopt the data standards related to this data set that is being used by CalRHIO.²⁴

- Medications (can serve as a surrogate problem list)
- Allergies
- Results - ACCEL examples might include laboratory, radiology, etc.
- Problem list (active)
- Past problems (resolved problems, past surgeries, chronic conditions)
- Immunizations
- Preventive care (schedules, guidelines based on age and gender)
- Chronic care management (protocols, guidelines based on diagnosis)²⁵

In addition to this list, the ACCEL HIE may want to consider adding some additional data elements over time. Examples of these may include:

- Visit history (positive notation, not sharing the content)
- Patient's primary language
- Advanced directive
- Special considerations (vegetarian, religion, or other issues)

Additionally, to support outbreak surveillance, bioterrorism oversight, epidemiologic study, and care quality assessment, the ACCEL HIE will exchange de-identified data aggregated from EHRs. An initial list of this data set may include:

- Chief complaints at emergency facilities
- Information on chronic disease treatments and outcomes
- Calculating cost of care according to several variables, such as what we screen for, outcomes, and services
- Sorting patients by additional factors, such as water supply and by geography (through the use of a Geographic Information System, GIS)
- Identify priority issues for program development and intervention

These data sets reflect a future state HIE with rich functionality. Implementation will be complex and expensive. To ensure success, ACCEL HIE will need to phase the implementation toward this end state. Phasing may take place according to any combination of the following:

²⁴ From CalRHIO website: <http://www.calrhio.org?cridx=501>

²⁵ From CalRHIO website: <http://www.calrhio.org/?cridx=502>

- By geography (such as Western or Eastern slope)
- By number of users (by individuals)
- By categories of users (such as physicians, clinics, facilities, etc.)
- By data exchanged (such as demographics, allergies, etc.)
- By functionality available (infectious disease reporting only, read only, input data, etc.)
- By technology (connecting to EHRs, browsers, practice management systems, etc.)
- By demonstrating early wins (value propositions) for stakeholders

For the purposes of this business case the following assumptions were made:

- The HIE will begin by implementing a county-wide MPI.
- Geographically, the HIE will begin development on the Eastern Slope (South Lake Tahoe area).
- ACCEL will select an IT vendor in the lower cost range (different vendor estimates ranged from \$150,000 to \$2,000,000)

B. Technology

The first step will be to install the county-wide MPI so that participating organizations are able to exchange and update demographic information, and provide a match on patients at different healthcare delivery stations. This will be essential infrastructure for the additional components to be added over time.

There are two core technology architectures being used to facilitate the exchange of health information, but most final solutions will likely be some hybrid of these, depending upon the vendor selected and community needs:

Option A: The data extracted from multiple sources would be stored in a data repository and accessed through an Electronic Health Record (EHR). This model is also known as the *centralized* approach.

Option B: The solution would be a virtual EHR, where the data remains in the source system and is accessed as needed by a locator application. This model is also known as a *federated* approach. Option B is typically implemented using one of two different architectures:

- Using a Record Locator Service (RLS) as supported by the Markle Foundation
- Using an Integrated Healthcare Enterprise (IHE) approach, where relevant data is pushed to a document registry and document repository, and then are pulled from these when inquiries are made.

There is no “winner” model to date. On the national level, it is likely that the National Health Information Network (NHIN) will be a federated approach that will roll up local HIEs and RHIOs into larger and larger regions. Still, Option A is likely to have better performance at least in the short term, and may remain a viable solution at the community level. While some communities may fully select a model, many operating

HIEs have ended up using a hybrid of the two options. Several issues to consider when selecting an approach are summarized in the table below:

	Option A: The Centralized Approach	Option B: The Federated Approach
Technical Complexity	Option A relies upon existing systems and technology, and therefore will be easier to implement and support.	While some vendors claim success with Option B technology, even those with some experience with this model state that adequate capabilities in the US are still under development.
Performance	Many vendors cited performance as a reason for choosing Option A. This model is simpler, uses fewer gateways, is reliant on fewer data sources, and is likely to have faster response time. Research by Wellogic showed that clinicians will not use the service if the wait time is longer than 3 seconds.	Especially while the technology for Option B is still under development, this option is unlikely to perform as well. The speed and reliability of the system are only as good as the component parts, where there may be some weaknesses. However, some vendors do cite performance in the <i>long run</i> as one of the reasons to pursue Option B.
Data Ownership and Control	Some organizations consider their IT systems to be their strategic advantage and are not willing to permit external access or manipulation of their data. Additionally, although the data is technically owned by the patient, organizations take their stewardship of this responsibility to heart and some are not willing to release control of the data.	Leaves control of the data at its source; healthcare organizations and/or providers can determine what patient data needs to be made accessible to authorized providers and what data needs to remain within the access of only the healthcare organization (e.g., mental health notes, certain lab results, etc.)
Scalability	There are limits to how much Option A can be scaled. Participating organizations need to agree to the approach and additional organizations that join at a later date must be able to accommodate the model. Option A gets increasingly difficult as the size of the RHIO expands.	A federated approach is designed from the start to scale to include various organizations and expanded scope.
Positioning for the future	Although proprietary solutions are not inherently stagnant in Option A, because these are not required to evolve with the marketplace, they run the risk of failing to keep pace with the rest of the country, thus, making themselves less relevant or obsolete over time.	Among these vendors, there is near unanimous agreement that the national solution will be federated. Some believe that a model that is set up from the start in a federated approach will more easily roll up into future connectivity goals.
Decision Support Capability	Data may be more easily aggregated in the centralized approach for supporting clinical decision-making. For instance, with an Option A approach, a CDS engine can run against historical data as well as real time, so more complicated algorithms can be monitored.	Decision support capability can be applied to Option B with active queries. However, matching current data with relevant historical data can be more complex.

Source²⁶

²⁶ Table content source: Interviews with HIE technology vendors, including: Axolotl, dbMotion, Cerner, GE Healthcare, HealthUnity, HTP, IBM, OpenHRE, NextGen, and Wellogic.

The ACCEL HIE Steering Committee with input from the ACCEL IT Advisory Team, will need to assess the relative importance of these factors for EDC and select the best option for the county's immediate needs and strategic goals. The team may want to consider vendor Request for Proposals (RFPs) for both models to gather information on how these factors may play out in the EDC environment.

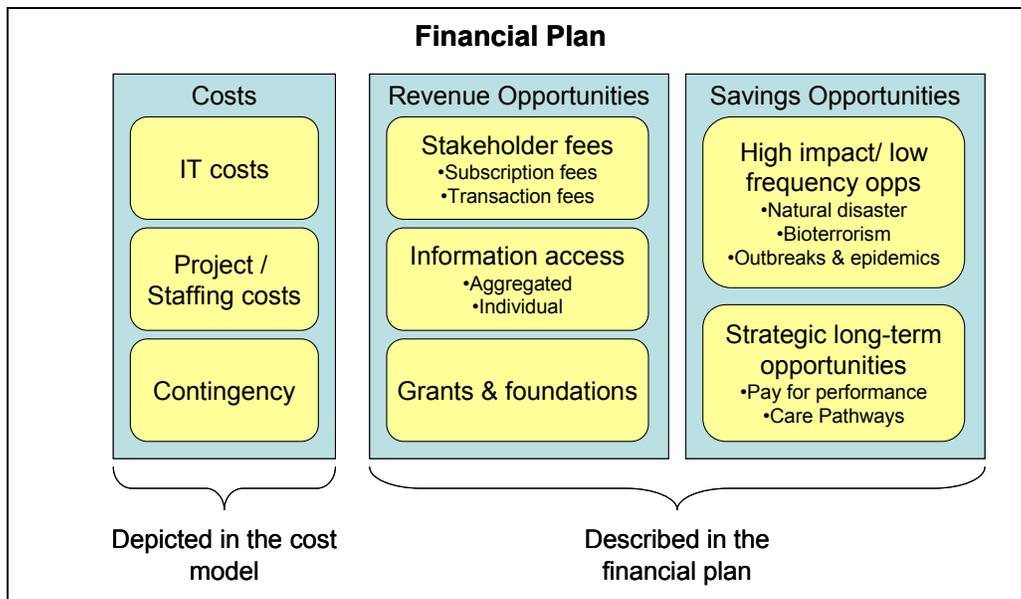
Technology costs will be a key driver in determining what solution to pursue. Initial meetings with vendors offered a wide range of prices. There was a set of vendors that estimated cost of implementation to be in the \$200K - \$500K range and another set that estimated costs in the \$1M - \$2.5M range. This dramatic difference indicates the uncertainty in technological solutions and the potential variety of capabilities included in the concept of HIE, and therefore, may not accurately reflect the cost of this type of project for EDC. For the purposes of this business case, technology costs will be estimated in the middle, with 30% cost sensitivity analysis.

VII. Financial Plan

A. Process Overview

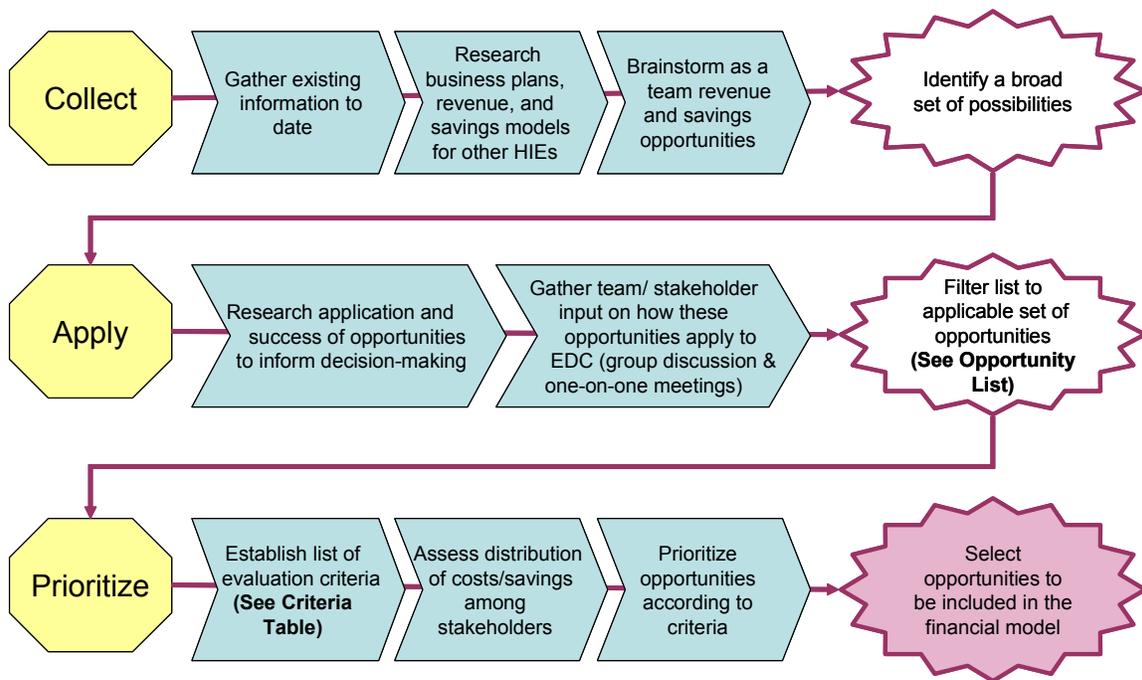
To develop a financial plan for the ACCEL HIE, the Financial Advisory Team met monthly from October 2006 - February 2007 to identify potential savings and revenue opportunities. The team universally agreed that there were many quality and community benefits to implementing the HIE that would be valuable to track. The following discussion refers specifically to the financial impact of the exchange. These other benefits, both quantified and non-quantified are critical to note and are discussed in later in this section.

The outcome of the financial model is depicted below:



The team used a three-stage approach to develop the plan:

- **Collect:** Gather information collected by ACCEL, research from other HIEs, and brainstorming from team participants.
- **Apply:** Using teachings and guidance from other HIEs, the team applied these opportunities to the particular context and needs of EDC to create a list of applicable opportunities.
- **Prioritize:** Using criteria reflective of what's been used by other HIEs and selected and validated by the team, the group prioritized the opportunities and identified a select list to be pursued in the financial model.



The ACCEL HIE is different than many other exchanges in several respects. The two-slope region makes for distinct geographic areas with very little physician/patient overlap. This intra-county regionalization is conducive to phasing by geography, but limits the opportunity of savings associated with sharing records between slopes.

Additionally, the hospital on each slope is the major referral center, and in many respects, serves as the healthcare hub for that portion of the county. Each hospital has its own plan for developing and implementing an EHR, with the intention to share this EHR with its own referring physicians. While implementing an EHR has been a primary task and also a major source of savings opportunities for many HIEs, this endeavor is taking place outside the scope of the ACCEL HIE initiative. Therefore, many of the savings published for HIE and RHIO initiatives in other locations are not applicable to the financial model for the ACCEL HIE.

Despite the division, the two slopes face the same opportunities, circumstances, and challenges, with services common to the county. In EDC these include the ambulance service, Medicare and Medi-Cal patients, Public Health and Mental Health services, and epidemiological issues such as outbreak monitoring and bioterrorism surveillance. In these respects, all parties agree that there is significant value in implementing the HIE.

Initially, the set of opportunities for savings and new or expanded revenue was quite large. Through research and interviews with the key stakeholders, many of the possibilities were quickly ruled out because they were already being absorbed by the Electronic Health Record (EHR) implementation or because they were too small to measure the impact for in the county. The surviving opportunities were evaluated according to a list of criteria established and weighted by the team (See Criteria Table below).

The following criteria were selected based upon looking at activity of other HIEs and the experience of the Financial Advisory Team in evaluating previous projects.

Criteria Table

Criteria	Description	Weight
Impactful	Measures the level of impact a savings or revenue opportunity has upon the HIE financial model.	20%
Measurable	Describes the degree to which the savings or revenue opportunity can be quantitatively measured.	10%
Desirable	The impact of the savings or revenue opportunity creates a positive outcome and is aligned with ACCEL and participating partner goals and values.	20%
Relevant	The savings or revenue opportunity is specifically due to the HIE intervention and fulfills a stated goal of the HIE.	30%
Cost Efficient	Describes the relative cost of the savings or revenue opportunity.	10%

Opportunity List

Category	Opportunity	Description	Outcome
Transaction fees	Per use transaction fee for HIE users	A transaction fee would be charged each time the HIE is accessed by users.	Determined to offer incentives not to use the model. Not pursued.
Transaction fees	Per use transaction fee for particular partners	A transaction fee would be charged for particular providers for whom there is a quantifiable savings or benefit for participating in the HIE. (e.g., laboratories)	This opportunity is explored in greater depth later in this section. See Stakeholder Contributions.
Transaction fees	New registrant transaction fees	A fee would be assessed either to the provider, entry point, or patient each time a new registrant is added to the HIE.	Could offer incentives not to participate in the HIE and would have limited financial benefit given the small county population. Not pursued.
Subscription fees	HIE Subscriber fees	A fee contributed by a set of “subscribers” who are key stakeholders and earn some kind of guiding role in the development and maintenance of the HIE.	This opportunity is explored in greater depth later in this section. See Stakeholder Contributions.
Taxes	Taxes would be collected to finance the HIE	Given that the HIE is being developed for the public good, it could be financed through taxes contributed by the population. Some state initiatives are funding HIEs through taxes or bonds.	Unlikely to pass the required approval of 2/3 of voters, and would be logistically beyond the scope of current HIE resources to pull off.

Alternative reimbursement strategies	Reimbursement for outcomes rather than activities	The HIE will facilitate improved quality outcomes and fewer redundant services. Stakeholders would seek higher reimbursement from government and private payers based upon the ability to document improved outcomes rather than on each encounter.	Pursued as a long-term strategic goal later in this section.
Alternative reimbursement strategies	Higher reimbursement	The HIE will offer better tracking and monitoring of health status, quality outcomes, and costs. (Pay for performance)	Pursued as a long-term strategic goal later in this section.
Information access - group	Selling aggregated, de-identified data	Meaningful and complete health data sets are valuable to researchers, pharmaceutical companies, insurers, and other industry stakeholders.	Pursued as a long-term strategic goal later in this section.
Information access - individual	Providing comprehensive health records to external parties for a fee	External entities (health insurers, life insurers, disability insurers, etc.) currently pay a fee to gather copies of medical records on applicants from multiple sources. The HIE could offer a single source and charge for accessing this information.	The volume of this type of inquiry would be insufficient to justify the cost of administration. Not pursued.
Advertising fees	Selling HIE browser window space	There may be a lucrative targeted advertising opportunity for the HIE browser window. Could offer value without impacting users, subscribers, or patients.	Advertising was determined not to be in sync with HIE values at this time. Not pursued. (Steering-Committee may choose to revisit at a future date)
Grants and foundations	Seeking funding from external entities funding HIE development	To date ACCEL has received its funding from grants. Given the long-term nature of financial returns, this is likely to remain true in upcoming years as well. Grants may be pursued independently by participants to ready themselves to take part in the exchange, and by ACCEL overall to fund the HIE.	Described later in this section.
Service efficiencies	Savings from ambulance service efficiencies	Since the ambulance service is run by the county, any efficiencies and clinical benefit in data sharing and registration can be accrued to the county and participating stakeholders	Not of sufficient scale to justify the investment at this time.
Improved outcomes	Better health care quality	The HIE may facilitate both providing and documenting better quality outcomes. These improve patient experience and save money.	These savings would initially be achieved by those bearing risk. EDC would seek to access this savings through P4P, which is being described as a long-term strategic goal later in this section.

Out of region communication	Better exchange with out of region providers	Patients seeking care outside of EDC may have their records more accessible in a more comprehensive way by out of region providers.	The savings associated with the low volume of these inquiries would be too small to note on the scale of this financial model.
Population monitoring	Improved epidemiology and outbreak monitoring	The HIE may be able to identify outbreaks that would not otherwise be picked up by individual providers and/or are not being monitored by EHRs.	Pursued as a high impact/low frequency scenario described later in this section.
Care Pathways	Automating Care Pathways partners through the HIE	The ACCEL Care Pathways program will offer some savings to participants. These savings would be enhanced as the HIE facilitates automated exchange among the participating Care Pathways stakeholders.	An evaluation for the Care Pathways program will be complete in Fall 2007. This will serve as a baseline for estimating incremental savings as a result of the HIE. Described as a strategic opportunity later in this section.

Because many of the opportunities do not readily fall into a traditional financial model, this business case describes these rewards in several ways:

1. **Stakeholder contributions:** The team explored numerous strategies for stakeholder contributions, landing on pursuing prescription fees and transaction fees.
2. **High impact/low frequency scenarios:** EDC is currently inadequately prepared for incidents such as serious infectious disease outbreak, bioterrorism, or natural disaster. Although these are relatively unlikely to occur in any four year period, should one occur, it could have potentially disastrous effects on the population. This potential is an important driver for developing the exchange, but with a small population over a short time period, does not show up positively in a financial model. Instead, examples of what the impact of these incidents might be are described in later in this section.
3. **Strategic/long term opportunities:** These opportunities may be realizable benefits from the exchange, but would not likely offer a significant financial impact during the four year scope of the financial model. These opportunities contribute to the long term vision of the HIE.
4. **Synergistic opportunities:** The activity at the national and state levels toward developing a NHIN and RHIO respectively make it clear that electronic exchange of health information is fundamental to the future of healthcare. EDC stakeholders recognize this trend and have elected to be proactive in meeting this challenge. It is still unclear how the facilitated exchange of health

information will end up changing the delivery and administration of care, but it is sure to have a substantial impact. These are not delineated in this report.

5. **Non significant enough impact:** There were numerous opportunities mentioned, both several listed in the table above, and many that were ruled out at previous stages, that may offer some potential savings. However, given the small population of EDC, the impact was not considered large enough to be quantified in the financial model at this time. These have not been itemized at this time.

Given this context, ACCEL has elected to prepare a limited, four year cost model to estimate investment needed during the next four years. Additionally, ACCEL has offered examples of how these savings opportunities could impact health finances for the county in upcoming years. The remaining opportunities are presented in the business case for future development and study.

B. Cost Model

ACCEL has developed a four-year, high level cost model to estimate investment required to build a regional HIE. At this time the primary expenses noted were staffing and technology. Technology costs include license fees, interface development costs, and implementation costs. Additional resource requirements may be identified as the HIE requirements and planning become more developed. To account for this uncertainty a 15% contingency has been added to the total incremental ACCEL costs.

In general, new costs due to the HIE were listed as ACCEL costs. As incremental labor will be required at the participating sites, these additional staff were identified as contract positions and listed under partner costs. As planning and implementation move forward, in-house partner subject-matter expertise will need to be accessed. These resources are assumed to be budgeted and so have not been itemized at this stage. Since Barton hospital will be hosting the application, the hospital has been allocated a higher number of incremental resources. Although incremental and budgeted staffing fees may vary widely, for the simplicity of the model at this stage, all costs were estimated at \$100/hour.

Assumptions for IT expenses came from multiple sources. Vendor estimates were based upon interviews with eight different vendors that sell services to facilitate the exchange of health information. The cost disparity from these interviews was so great that caution must be taken in firming these estimates until greater requirements gathering and further vendor discussions have taken place. The model includes an estimate in the lower range of vendor fees. In the detailed cost model, additional calculations have been done if the higher range of fees turns out to be necessary. This variable could be a deciding factor for the HIE. Estimates for interface costs were borrowed from a business case that estimated the value of health information exchange for the nation.²⁷

This model assumes that the majority of implementation costs will be borne during the first year (2008), and that additional facilities and functionality will be added to the HIE in future years. As these plans become more refined, the financial model will need to be updated to take into account new timelines, refined vendor estimates and implementation costs, and stakeholder presence.

Finally, given the early stage of inquiry, a 30% cost sensitivity was conducted on all incremental costs attributed to ACCEL.

²⁷ Walker, J. et al. "The Value Of Health Care Information Exchange and Interoperability." Health Affairs. January 19, 2005.

Cost Summary

	2008	2009	2010	2011
Labor Expenses				
ACCEL Labor Expenses	\$ 559,620	\$ 746,000	\$ 746,000	\$ 140,000
Partner Labor Expense	\$ 270,000	\$ 730,000	\$ 730,000	\$ 150,000
Labor Expense Subtotal	\$ 829,620	\$ 1,476,000	\$ 1,476,000	\$ 290,000
IT Expenses				
License Fees	\$ 40,000	\$ 40,000	\$ 40,000	\$ 40,000
Interface Costs	\$ 90,000	\$ 70,000	\$ 40,000	\$ -
Implementation Costs	\$ 230,000	\$ 70,000	\$ 70,000	\$ 70,000
Contingency - 15%	\$ 54,000	\$ 27,000	\$ 22,500	\$ 16,500
IT Expenses Subtotal	\$ 414,000	\$ 207,000	\$ 172,500	\$ 126,500
SUBTOTAL	\$ 1,243,620	\$ 1,683,000	\$ 1,648,500	\$ 416,500

Sensitivity Analysis

	-30%	Estimated	~+30%
2008	\$ 870,534	\$ 1,243,620	\$ 1,616,706
2009	\$ 1,178,100	\$ 1,683,000	\$ 2,187,900
2010	\$ 1,153,950	\$ 1,648,500	\$ 2,143,050
2011	\$ 291,550	\$ 416,500	\$ 541,450

C. Revenue Opportunities

1. Stakeholder Fees

a. Subscription Fees

A subscription fee is a contribution that participating organizations make to the HIE. For many HIEs, the membership/subscription model is a key component to earning funds and investment from its stakeholders and working toward sustainability.²⁸ Subscription fees can be a fixed fee for all stakeholders, offer some variation based upon stakeholder size or contribution, or can be mixed with other revenue models such as transaction fees, depending upon stakeholder role.

For the ACCEL HIE, the Financial Advisory Team recommends instituting a subscription fee for those organizations that participate in governance. Determining the appropriate formula for fees will be a challenge for the Steering Committee to determine. Factors to consider include:

- Organization size and budget
- Organizational investment in other aspects of the exchange
- To what stakeholders benefits and savings are accrued
- Other transactional fees that are assessed
- Governance roles based upon contributions and other factors

b. Transaction Fees

Transaction fees are assessed on a per transaction basis by users of the HIE. Examples of transaction fees are listed in the table below.

Transaction Fee	Payer	Example	Comments
Registration fee assessed for each new individual entered into the HIE	Either the individual or registration source	None identified	This would be high cost to implement, generate low revenue, and create incentives for folks not to participate.
Fee assessed each time a user accesses the HIE	Providers	None identified	Could offer incentives for stakeholders not to use the HIE.
Fee assessed when data is accessed by ancillary participants	Laboratories Radiology Services Pharmacies	<ul style="list-style-type: none"> • Taconic HINC, NY • Indiana HIE • Hawaii 	These providers save money by gaining electronic access to the HIE, and so have been willing to pay fees in some HIEs.
Fee assessed to participate in administrative data exchange	Providers	<ul style="list-style-type: none"> • Massachusetts • Utah HIN 	Many states/regions have already developed EDI capabilities, and so this functionality is not included in the HIE.

²⁸ Glaser, p. 9.

Due to the size of the HIE and ACCEL's desire to encourage usage, the Financial Advisory Team recommends considering to assess transaction fees only for those entities that are directly saving money as a result of using the exchange. For EDC, this includes private laboratories and radiology services.

There could be considerable administrative cost savings for private laboratory and radiology service companies. According to a Health Affairs study on the financial value of clinical information exchange, the electronic exchange of information with ancillary carriers can save 95% of the administrative costs for each transaction. While the hospitals in EDC County perform most of their radiology and laboratory services in-house, they send out about 15% of radiology and 5% of laboratory services to private companies. These tend to be one or two vendors in the vicinity.

According to gross calculations, there would be a potential for high dollar savings, sufficient to justify the expense of creating an interface with the HIE (likely - \$50,000/site). These savings, however, are likely inflated due to the accounting methodologies at the two hospitals and do not accurately reflect the actual savings impact. While the hospitals may save some small amount of resource time in receiving and processing out sourced clinical and laboratory results, this volume is unlikely to be sufficient for realizable cost savings. The ancillary providers would benefit from the bulk of these savings. This indicates that such ancillary providers could be willing to pay a transaction fee for each time they access the HIE, as has been demonstrated in other initiatives around the country.

Before moving forward with this new revenue potential, there are numerous additional considerations for the Steering Committee to take into account:

- Previously when outsourcing these services was required by a temporary contract change, the impact was confusing and inconvenient for clients.
- Overhead that is allocated to all cost centers within the hospital, and so do not reflect the true incremental costs of each laboratory and radiological result.
- These services, especially radiology, tend to be important profit centers for the hospitals. Facilitating this kind of exchange could make integration with outside service companies easier, thereby making it easier for them to increase market share. Loss of this revenue could have significant negative impact on the hospitals' overall well-being, which would be especially troublesome in a county with limited hospital options.

2. Information Access

a. Aggregated Information Access

The privacy of El Dorado County residents is of utmost importance to the integrity of the HIE. As such, there will be strict guidelines on how individual information will be shared among relevant providers, along with the patient's signed written consent. This information will not be shared with third parties.

Aggregated data that includes a broad patient population can be valuable. This data is de-identified, and so cannot be linked to any individuals. Instead, it allows researchers to study population health and view trends over time. Such a data set could be valuable to third parties such as researchers, pharmaceutical and medical device companies, etc. El Dorado County may consider selling access to this data in its de-identified form in order to raise revenue for the exchange. The value of this data set is yet to be determined, depending upon the functionality selected for the exchange. As HIEs become more numerous, such datasets will become more readily available, which could lead to lower market value over time.

b. Individual Information Access

Upon occasion, with a patient's written consent, third parties need to obtain medical information or history on a patient. These companies, often insurers (health, disability, life), are required to pay a fee to the provider for obtaining a copy of the information. If this information were available in a convenient set through the HIE, and could be obtained on a per-authorization basis, it could save administrative time for the providers as well as fees for those requesting the information. At rates of \$1 or more per page, these requests often cost the requestor \$50 or more.

The limited information exchange in the early stages of the project, as well as the low volume of these inquiries may be insufficient to justify the infrastructure established to set up this practice. However, as the HIE functionality is enhanced over time, this concept should be revisited to assess a new revenue opportunity in the future.

3. Grants and Foundations

While ACCEL recognizes that in the long run it will be important for the HIE to develop a stable means of funding through some combination of revenues, savings, and stakeholder contributions. Since these are unlikely to provide sufficient funding for early development and implementation, additional funding sources are required. To date, all of ACCEL's funding has come from grants, and this is likely to continue to be a major source of funding over the next few years. ACCEL will likely pursue seeking multi-year funding streams to maximize the stability for the project.

D. Savings Opportunities

1. High impact/low frequency scenarios

One of the key reasons cited for the development of regional connectivity for health data is to improve a community's ability to identify and respond to crisis.

a. Natural Disaster

Natural disaster can have a sudden and crippling effect on the health of a region. As an example, Hurricane Katrina destroyed thousands of paper medical records, leaving patients without any documentation of their medical history. The Louisiana State University Healthcare Network (LSUHN) alone indicated losing over 250,000 medical charts and had thousands of patients and providers displaced.²⁹ In response, LSUHN and other institutions have instituted EHRs to automate health records and connect regional physicians.

While hurricanes are not a prominent threat in El Dorado County, the region remains at risk for natural disaster due to wild fire, extreme winter weather, and earthquakes. In such cases, whether the results were cataclysmic, or temporary, blocked access to providers or medical records could significantly weaken the county's ability to respond to its citizens in critical need. This regional connectivity would enable care at alternative locations and maximize the potential of continuity of care, particularly for those with chronic and critical illnesses.

b. Bioterrorism

Although unlikely, bioterrorism is an emerging concern for community planning. The Centers for Disease Control and Prevention (CDC) is encouraging local health departments to improve their planning and preparedness. In their document, "The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials," the CDC offers five key elements to preparedness:

1. Hazard Analysis
2. Emergency Response Planning
3. Health Surveillance and Epidemiologic Investigation
4. Laboratory Diagnosis and Characterization
5. Consequence Management³⁰

The report highlights the importance of health surveillance and epidemiologic investigation planning. According to the CDC, "An effective public health response will depend on the timeliness and quality of communications among numerous partners: public health agencies at local, state, and federal levels; clinicians; laboratories;

²⁹ Press Release: Allscripts, February 26, 2007.

³⁰ "The Public Health Response to Biological and Chemical Terrorism: Interim Planning for State Public Health Officials." US Department of Health and Human Services, Centers for Disease Control and Prevention, July 2001, p. 8.

poison centers; medical examiners; and other health response partners.”³¹ The CDC recommends these steps to prepare for bioterrorism specifically, but also notes that they will fundamentally improve public health surveillance and stakeholder coordination for they community as a whole.³²

The El Dorado County Department of Public Health has a dedicated and professional staff armed to meet these challenges. However, team members have indicated that they feel they could do much more with the use of an HIE. Since most of the data used by DPH comes from the local clinic, it is skewed and not necessarily representative of the county at large. Often DPH staff must reach out to providers to ask about the incidence of particular conditions rather than having this information readily flowing to them. The manual processes lead to insufficient reporting from the provider community as a whole.

Public Health team members believe that automated reporting from Emergency Rooms and eventually from EHRs would enable them to better apply their resources to monitoring and proactive intervention rather than to outreach and data collection.

In order to better detect epidemics and bioterrorist outbreaks, the county needs automated monitoring with input from Emergency Rooms, Public Health Centers, laboratories, and physician offices.

c. Outbreaks, Epidemics, and Pandemics

The steps that would support better surveillance for natural disaster and bioterrorism would also be beneficial in helping the community to monitor and respond to health conditions. Three examples are described below:

- Avian flu pandemic: The unlikely, but critically important emergence of a new virus with severe public health impacts.
- Norovirus epidemic: A highly contagious virus that can be managed with effective interventions.
- Meningitis: A severe but rare condition to be identified and monitored.

1) Avian Flu Pandemic

The avian flu is a condition that has gotten quite a bit of attention in the news recently. The avian flu is caused by influenza viruses that occur naturally in wild birds. The virus is deadly to birds, and on occasion, has been transmitted to humans. Should the virus mutate so that it could spread rapidly from person to person, it would lead to an epidemic (local outbreak) or a pandemic (global outbreak).³³ A pandemic could occur at any time and arise from a variety of sources. Although the current H5N1 strain that circulates in Asian birds is a strong candidate that could cause a pandemic,

³¹ “The Public Health Response...”, HHS, CDC, p. 11.

³² “The Public Health Response...”, HHS, CDC, p. 15.

³³ “Pandemic Influenza: Preparedness, Response, and Recovery: Guide for Critical Infrastructure and Key Resources.” US Department of Homeland Security, September 19, 2006, p. 11.

it is not the sole influenza pandemic risk to the population.³⁴ Because a vaccine could not be tested until the epidemic is occurring, it would be difficult to contain the spread at early stages.

Should the disease mutate to an easily transmitted one, surveillance would be of utmost importance. The CDC has implemented hospital-based surveillance at selected sites for influenza in children, and has issued guidelines for monitoring conditions that develop in travelers, along with identifying a series of goals to improve monitoring and detection.³⁵ Flu epidemics have historically had a dramatic impact upon the population. It is difficult to predict the precise outcome of an avian flu epidemic, since one could not predict the severity of infections caused and the virulence of the virus. Still in the three 20th century pandemics (1918, 1958, and 1968), about 30% of the US population contracted the disease, with about half of those seeking medical care.³⁶

Based upon these numbers, El Dorado County could expect to have approximately 51,000 cases of the flu, with approximately 25,500 seeking medical care. This number would be too much for the small medical infrastructure to manage and could have a devastating impact on the morbidity, patient health, ability to treat those with other and chronic conditions, and the regional economy.

In order to more effectively comply with CDC Guidelines and recommendations, El Dorado County must improve its surveillance and communication mechanisms. Early detection and effective monitoring throughout a pandemic would enable the community to take appropriate measures to contain the spread of the virus, reducing the suffering of EDC residents, and minimizing the strain on medical resources.

2) Norovirus

Although Norovirus does not have as broad a risk to the population as the avian flu, its prevalence makes it an important condition to control. Norovirus is easily transmitted, causing a gastrointestinal illness leading to diarrhea and vomiting. While it is extremely uncomfortable, it is not serious except in persons who become severely dehydrated. Those infected with the virus typically recover within one to three days, but it can sometimes be more serious for the elderly and for those with weakened immune systems.

There have been several outbreaks of the Norovirus in senior care facilities in El Dorado County in the last year. These have been effectively controlled once the outbreak has been recognized and control measures have been taken.

When an outbreak is identified, it can usually be contained by taking precautions such as isolating those infected, cleaning and disinfecting surfaces, and frequent hand washing. Earlier detection of the virus and communication among care facilities and

³⁴ "The Next Flu Pandemic: Evaluating US Preparedness." Statement by James W. LeDuc, PhD., Director of Viral and Rickettsial Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention, US Department of Health and Human Services, before The Committee on Government Reform, United States House of Representatives, June 30, 2005.

³⁵ LeDuc, June 30, 2005.

³⁶ "Pandemic Influenza..." US Department of Homeland Security, p. 12.

care providers can ensure that heightened control measures are implemented sooner to minimize the spread of the virus.

These steps would result in less suffering for EDC residents, as well as reduced hospitalizations for those who become dehydrated as a result of the disease. Shortened quarantine periods will also reduce the strain on facilities, communities, and individuals coming into contact with those infected.

Meningitis

Meningitis is an infection of the lining of the spinal cord and the brain, caused by either a bacteria or virus. Early symptoms including high fever, headache, and stiff neck, and potentially nausea, vomiting, confusion, and sleepiness. In small infants, these symptoms may be more difficult to detect.

While viral meningitis cannot be treated with antibiotics, it tends to be less serious, and usually is able to resolve on its own with no long-term effects for the patient.

Bacterial meningitis can be very severe and potentially life-threatening. Early diagnosis and treatment is important to recovery. Fortunately, the meningitis bacteria do not live long outside the body, and so the illness is not as contagious as other conditions such as the Norovirus and flu. Still, given the severity of the condition, identifying the virus early can lead to additional preventive measures to limit its spread.

Bacterial meningitis is of special concern if it arises among children in school or day care centers. The bacteria are spread through direct contact with the discharges of the nose and throat of an infected person. Before additional control measures can be taken, it can be spread between children in close quarters. Cases in these settings can quickly lead to panic in the community and can be lethal.

Early interventions could result in better outcomes and shorter hospital stays for those infected, fewer infected resulting in fewer hospitalizations and fewer deaths, and shorter control management measures for the facilities, communities, and individuals in contact with the bacteria or virus.

2. Long-term/Strategic Opportunities

a. Pay for Performance

While some of the highest quality and cutting edge care is available in the United States, studies reveal that Americans are not receiving the highest quality of care possible, due to medical errors and practice variation.

One of the most frequently quoted studies, To Err is Human: Building a Safer Health System, a report published in 2001 by the Institute of Medicine, estimated that as many as 98,000 deaths in the US per year were due to medical errors, making

preventable medical errors one of the leading causes of death in the US.³⁷ Total national costs as a result of these errors is estimated between \$17 and \$29 billion dollars for preventable adverse events.³⁸

Studies also reveal that patients do not typically receive the quality of care they expect. A study of 12 communities in the US revealed that patients only received recommended care about 50% of the time.³⁹

These factors and looking at the practice variation within their own populations have lead many payers to consider reimbursement strategies that reward providers for improving quality outcomes and complying with evidence-based practices. Numerous studies are underway to assess whether “paying for performance” (P4P) can improve quality care.

One of the largest of these P4P efforts is the Integrated Healthcare Association’s (IHA) P4P initiative in California. This collaborative of the seven largest health plans in the state, along with 215 physician organizations, purchasers and consumer advocates has the goal of improving quality of care with both financial and non-financial incentives. This initiative measured performance along a variety of variables, including clinical performance, patient experience, and information technology investment. A study assessing the first year of the program confirmed that the program successfully met its goals to date and laid the foundation for future incentive-driven performance improvement.⁴⁰

Technology investment is one of the criteria for this California-based incentive program, and is included in many others. Information technology offers value on two fronts:

- **Reporting:** Improved IT provides the data to monitor provider performance, detect practice variations, and identify outlier cases and providers.
- **Delivery:** Information technology can assist with delivery by embedding quality practice standards within EHRs, electronic prescribing tools, and other resources used by providers when delivering and managing care.

The ACCEL HIE will offer capability to improve on both of these functions above and beyond what will already be provided by the regional EHRs. By consolidating and reporting data at the county level, HIE participants may be in a better bargaining position with both private and government payers. HIE stakeholders hold it as a strategic goal to negotiate higher reimbursements as a result of participating in the exchange.

³⁷ To Err is Human: Building a Safer Health System. Institute of Medicine. National Academy Press, Washington, D.C., 2001, p. 26.

³⁸ To Err is Human, IOM, p. 27.

³⁹ McGlynn, E. A., et al. The quality of health care delivered to adults in the United States. New England Journal of Medicine. 2003; 348(26): 2635-2645.

⁴⁰ Damburg, C.L., et al. Paying for performance: Implementing a Statewide Project in California. Q Managed Health Care 14(2):66-79.

The ACCEL HIE will also be able to track progress and outcomes of specific cases over time. Providers may consider reimbursement for outcomes rather than by total service. This alternative reimbursement strategy may only apply to specific conditions, but could appropriately align incentives for high quality and efficient care. Due to the cross-organizational collaboration for many patients, the HIE will be critically important to enabling this functionality.

However, given the long implementation timeline coupled with awaiting early results from the exchange, these benefits are unlikely to be realized within the scope of the financial model. Still, this potential is considered an important consideration for moving forward with the HIE.

b. Care Pathways

Care Pathways is a cross-agency case management program to ensure that a consumer's needs are attended to throughout many encounters in the health access and delivery process. Each pathway defines the problem to be addressed, the desired positive outcome, and the key intervention steps required to achieve the outcome. The program provides a standardized accountable structure to shift the focus towards defined outcomes. It is a patient-centric process that addresses one health care issue at a time. As work steps are completed, they are defined by a measurable outcome.

Pathways can address administrative access or clinical issues, such as chronic disease problems. Community Health Workers assist and monitor the person/patient progress through a Pathway. To date, four Care Pathways have been implemented: obtaining health coverage; securing a medical home; using a medical home appropriately; and facilitating pediatric mental health consults. Development of additional clinical pathways is planned in late 2007.

To date the Care Pathways process has been manual. EDC is in the process of contracting with a vendor for a software product that would allow users from multiple agencies to manage cases and track performance using browser based tools. This automation is expected to increase efficiencies and improve outcomes for the Care Pathways process.

Although the electronic solution will be accessible by users at different sites and organizations, it still is a stand alone product that does not exchange information with any other systems. As the HIE is implemented, Care Pathways will be able to achieve even greater efficiencies such as automated population of demographic and insurance information, treatment and scheduling information for chronic care management, and scheduling information for providers.

Care Pathways currently has a year's worth of data, so an initial savings model will be developed in the fall of 2007 to report on outcomes for first stage of the program. This will be used to estimate potential incremental savings that could be achieved through the ability to exchange data with outside systems.

VIII. Performance Measurement

The previous section discussed the costs and some of the financial benefits associated with a Health Information Exchange. Still, improved patient care remains one of the primary motivators for establishing the exchange. To do this, selecting metrics to be monitored at regular intervals will provide the Steering Committee information on how the HIE is performing, both in terms of improving quality and creating efficiencies. These metrics will need to be identified to match the prioritized objectives selected by the HIE Steering Committee. The table below offers some examples of metrics as a starting point for this prioritization process.

Goal to Measure	Metric	Data Elements	Frequency
Improved quality of care	Better cross-disciplinary case management for chronic illness	Measure compliance with Evidence Based Medicine (EBM) for cases managed through the HIE	Quarterly
Improved quality of care	Better able to monitor care quality and outcomes across the population	Identify specific health outcome targets and track over time	Annually
Improved quality of care	Lower number of low birth weight babies	Compare before and after the relevant HIE functionality is implemented	Quarterly
Improved quality of care	Immunization rate	Compare before and after the relevant HIE functionality is implemented	Quarterly
Improved public health surveillance	Earlier detection of outbreak	Time from first notification to outbreak identification	Quarterly
Improved public health surveillance	Frequency of data submission and review by providers	Actual frequency of data submission versus scheduled frequency	Quarterly
Stakeholder satisfaction	Survey of stakeholder use, success, satisfaction, and outcomes related to the HIE	Stakeholder satisfaction measures	Annually

IX. Risk Planning

Any project of this size and complexity has a considerable amount of risk associated with it. Key risk factors and mitigation approaches are summarized in the table below.

Category	Risk	Mitigation
Funding	ACCEL will not be able to secure adequate funds to cover the true cost of the HIE	<ul style="list-style-type: none"> Continue to update the cost model as more information becomes available on vendor selection, technology needs, priority capability, and stakeholder participation, so an accurate cost estimate can be made before committing resources. Pursue additional funding opportunities and sources as applicable.
Funding	Stakeholder partners will not have the adequate resources for their participation in the HIE	<ul style="list-style-type: none"> Regularly share findings of the ongoing financial updates mentioned above with stakeholders. Encourage and assist stakeholders with seeking grants or external funding to support their participation in the HIE.
Funding	Unforeseen obstacles or requirements demand additional funding that has not been accounted for	<ul style="list-style-type: none"> Include change management and contingency funding process in project planning. Rigorously manage scope to only include steps that are required for the HIE to function.
Funding / Staffing	Despite Partner Agreements, stakeholders redeploy ACCEL-dedicated resources due to internal demands or shifting priorities	<ul style="list-style-type: none"> Ensure that appropriate plans and language are built into Partner Agreements. Ensure stakeholders understand the interconnected nature of their role and how their decisions impact other stakeholders and the HIE overall.
Staffing	The project will not be adequately staffed for success	<ul style="list-style-type: none"> Before committing to staffing structure, benchmark staffing requirements from other HIEs. Establish contingency funds in case additional staffing is needed at critical junctures so that the project can continue to move forward.
Staffing	Stakeholders do not supply the necessary resources or the resources are not available in a timely manner, jeopardizing project deadlines	<ul style="list-style-type: none"> Include stakeholder representatives in project planning and milestone targets. Identify path for raising and resolving issues through ACCEL and stakeholding organizations. Create transparent project dashboard and reporting process for all stakeholders and committee members to see.
Communication	Multi-agency collaboration on a complex project may lead to insufficient communication between different constituents or work groups, resulting in conflicting goals or objectives	<ul style="list-style-type: none"> Publish meeting materials and notes at a centralized project share site. Publish talking points and critical communications in short emails or other forums so participants can access critical knowledge without burdensome document review.
Scope	Scope of the project shifts or expands due to changes in the environment or stakeholders	<ul style="list-style-type: none"> Define scope clearly and achieve agreement with all stakeholders at the onset. Rigorous manage a scope, requirements, and change management process to fully assess and manage the impact of scope changes.

Functionality	Components of the HIE do not function as planned.	<ul style="list-style-type: none"> • Apply sufficient resources during the scoping and requirements process for an accurate view of activities and resources. • Build contingency resources into the project budget.
Functionality	The HIE requirements as defined by EDC are not congruent with CalRHIO at the state level.	<ul style="list-style-type: none"> • Remain in communication with CalRHIO and ensure that EDC functionality can track with CalRHIO decisions. • Remain nimble enough to shift course as needed to stay compliant with state and federal level activity related to HIE. • Communicate with other HIEs to discover lessons learned and to ensure the capability of integration with broader initiatives.
Governance	Instability at the participant level leads to unclear governance and changing fixed decisions.	<ul style="list-style-type: none"> • Establish a rigorous methodology for documenting and agreeing to decisions by participants. • Ensure all stakeholders buy into the decision-making and outcomes process through partnership agreements.

X. Best Practices & Lessons Learned from Other Health Information Exchanges

We have gathered numerous lessons learned through meetings with and documents prepared by other HIEs and state, federal, and foundation resources. Some of these have been highlighted in this document so that they are revisited as the ACCEL HIE moves forward.

HIEs have been notoriously challenging projects to execute. They include diverse stakeholders, with varying interests and perspectives. The complexity of the data means that creating the exchange is both expensive and time-consuming. And overall, these exchanges are dealing with the most personal and sensitive of information. Recently, after almost nine years of work the Santa Barbara RHIO closed its doors because it was not able to move through these obstacles. To increase ACCEL HIE's likelihood of success, it is valuable to learn from these other initiatives.

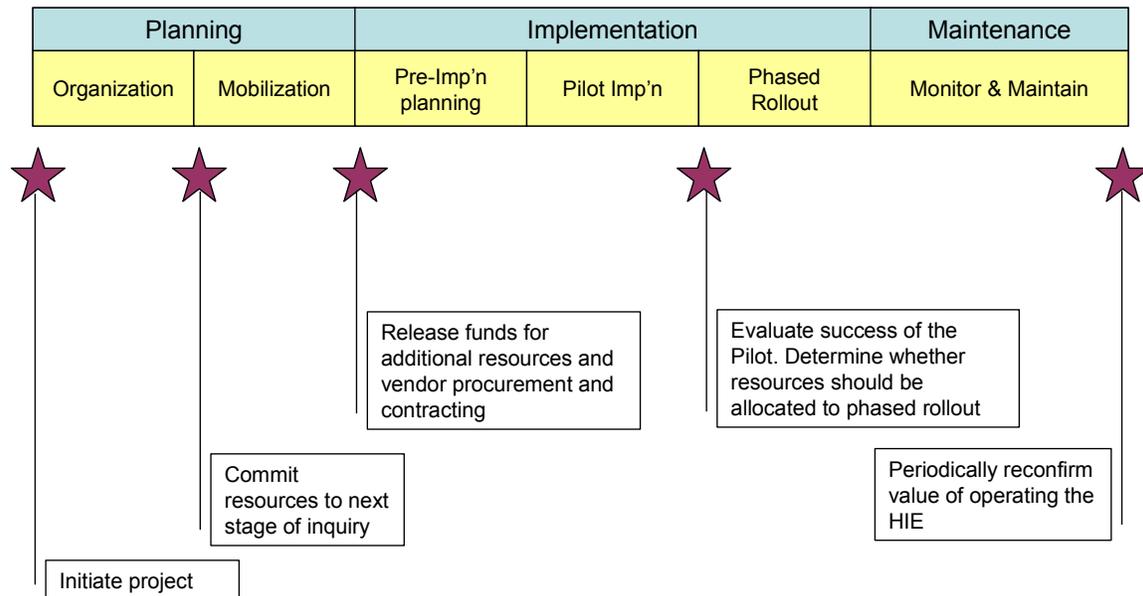
- **Start small:** As tempting as it may be to plan and build for the exchange of a robust set of data among multiple stakeholders, starting small has been identified as a key priority by other HIEs and vendors alike. The complexity of exchanging information can be easy to underestimate, both from a technology and end-user perspective. Proof-of-concept pilots can be useful in learning lessons that can be applied when expanding the HIE to more participants and with increasing functionality.
- **Include non-paying stakeholders:** Stakeholders such as patient's advocates, the underserved and other stakeholders that may not be able to contribute financially are still important members of the HIE governance. The HIE must plan for resources to enable these stakeholders to fully participate.
- **Balance stakeholder payments with perceived value:** Not all stakeholders have the same to gain from the HIE. Having some stakeholders pay the bill while others reap the benefits will lead to challenges. The balance between contributions and rewards must be reviewed at intervals to ensure that as the HIE changes, these equations remained balanced as well.
- **Leverage the payer environment:** Ensure that payers are part of the decision-making and are in agreement with their own contributions, risks, and rewards as a result of participating in the HIE.
- **Coordinate between state and local initiatives:** Ensure that local efforts do not duplicate or interfere with steps at the state level. Leverage state-level activity wherever possible.
- **Be realistic and think long-term when acquiring funding:** Ensure that funding is adequate and that a stream of funding is available so that the HIE does not need to stop work at any time due to lack of resources. Where possible, obtain multi-year funding. Grants may not be a realistic source of funding long-term, so efforts to get funding through stakeholders, revenue, savings, and other sources should remain a priority as the HIE develops.

- **Do not expect sustainability...at least not right away:** While advocates expect HIEs to achieve cost savings eventually, the initial outlay of costs and resources is so great that this kind of outcome may not be realized for some time.
- **Begin privacy and security discussions early:** Despite federal data-sharing standards, these decisions for a community may be difficult for stakeholders to agree upon. This issue was one of the critical challenges that the Santa Barbara RHIO was not able to overcome.
- **Neutral organization:** Most successful HIEs have a neutral organization, often a 501C3 as its organizing body. This builds trust by stakeholders and allows for a centralized site of accountability during execution.

XI. Next Steps

A. Decision Points

Throughout the development process there are critical junctures, when all participants will contribute to a decision to continue to move the project forward. Making these decisions off schedule from these decision-points can lead to wasted resources and missed deadlines. These decision points are summarized in the diagram below:



In order to move the HIE to the next level of realization, the participants must make the decision to commit the necessary resources for the next round of inquiry. Once this decision has been made, the group may consider the following next steps to kick-off the next round of work:

1. **Establish Steering Committee Monitoring:** A Steering Committee serving ACCEL and/or the HIE would serve as the governing body and will be responsible for critical decisions upon which the rest of the committees' work will depend.
2. **Initiate HIE Project Work Team:** When ACCEL is ready to move into the mobilization phase, initiate IT and Business Project Leadership to develop detailed project plans, work structure, and to build tight and rigorous agendas for initial committee meetings. Partner collaboration will be more successful with efficient and outcome-oriented use of their time.
3. **Identify participants for collaborative work teams:** Ensuring that the right players are there may be challenging, but will be critical to the project's success.

4. **Hold an HIE Kick-Off for each committee/work group:** Each group can be brought to a level playing field with regards to understanding HIEs and the initiative in EDC.
5. **Establish a process and timeline for arriving at decisions identified below.** This section is followed by a table recommending which groups may need to be consulted for each decision. All decisions should be finalized by the Steering Committee.

Decisions to be made by the Steering Committee, with input from other groups as specified, in the early stages of the HIE:

- **Who should be involved?** Typically, stakeholders involved in a successful regional intervention include: purchasers, payers, providers, patients, politicians, and public health.⁴¹ Once these categories of stakeholders have been identified, the governance group must identify a means to engaging the participation and support with representatives of these stakeholders.
- **What are the mission and values of the HIE?** The HIE has been working with drafts of mission and values that have been prepared by ACCEL leadership. These need to be reviewed, adjusted, and ratified by the coalition body.
- **How will decisions be made?** The stakeholders may have different interests at stake. For instance, hospitals may be making a significant financial commitment for which they hope to see some kind of financial savings, while a patient representative may have security and patient-centeredness at the top of their list. The governance group will need to decide how they will make decisions, whether consensus is required, and how contrasting incentives may be managed. Will the model be driven by consensus, majority, quorum? Under what circumstances does a governance team member have veto power? Do paying sponsors have different decision-making authority than non-paying sponsors?
- **What are the primary goals in the short and long term?** While outcomes have been identified for the Health Information Exchange (see attached chart), these outcomes provide the desired results from a fully implemented product. Due to resources, time, and other stakeholder constraints, the goals of the exchange must be prioritized to inform the structure and functionality that will be implemented with the exchange. Pursuing such a broad set of outcomes may challenge decision-making and lead to a less focused HIE solution. Some examples of primary objectives may be:
 - To measure performance of providers;
 - To offer data to engage and educate the public in being more engaged consumers;

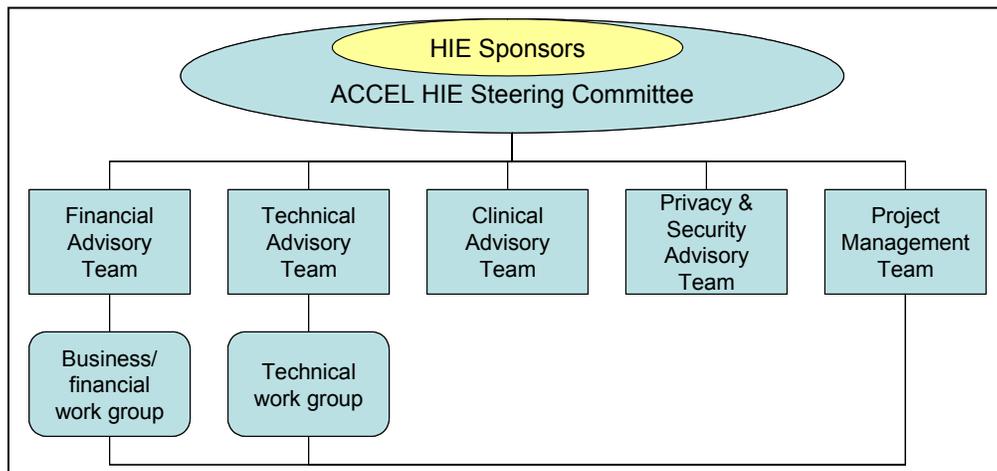
⁴¹ Wagner et al., p. 11.

- To improve provider quality and compliance with evidence-based medicine;
 - To improve quality of chronic disease care;
 - To improve early detection and outbreak surveillance capabilities;
 - To achieve new revenue streams and obtain cost savings for key stakeholders as soon as possible;
 - To increase the efficiency of health delivery in the county overall.
- **What funding/revenue sources will be pursued?** This group will be responsible for evaluating the recommendations made by the Financial Advisory Team and determining which financing options need to be pursued.
 - **What functionality will be implemented first and how will capabilities be phased over time?** Based upon the results of the previous questions, the group must decide which functionality will be implemented first, and how expanded capabilities will be added over time. For instance, initial capabilities may be limited to just a few data elements (e.g., demographics, de-identified cases of infectious disease, prescriptions, lab results, etc.) to be shared among a limited set of stakeholders.
 - **How will success be determined?** Based upon what the governance team decides for previous items, it must identify how success for the HIE will be determined. Is it by successful collaboration, successful data exchange, appropriate data exchange, becoming cost neutral, improving quality of care, etc.
 - **What milestones and check points will require Steering Committee-level monitoring?** The governance team will need to be aware of decisions and progress related to the exchange. They will be responsible for ensuring the project is on track, assisting with roadblocks or big challenges, and making course adjustments as needed. To do this effectively the group will not be involved in the day-to-day management and progress of the HIE. Instead, the group will need to decide when and how to monitor these activities. For instance, meeting at regular intervals, at key milestones, at the request of the project or advisory teams for consultation, etc. Decisions that are not determined to be relevant at the governance level will be left to the advisory and project management teams.
 - **What degree of transparency will the Steering Committee adopt?** The group will need to decide whether its activities will be private, reported by mutually agreed meeting notes, or accessible to the public and stakeholders.

B. Governance

At onset, the ACCEL HIE has been guided by ACCEL, the two hospitals, EDC Community Clinic, and the Departments of Public Health and Mental Health. As the HIE becomes more formalized, a governance structure that will include a broader set of stakeholders in the county will be needed. Depending upon the HIE strategy, these may include health plans, pharmacies, laboratories, employers, patient advocates, and other community representatives. As ACCEL establishes a governance structure to oversee all of its initiatives, the HIE may be able to fall under this umbrella.

The governance for the HIE will require a collaborative approach, welcoming the insights of both sponsor and other stakeholders for overall direction and project execution. Final decisions for governance will depend upon the outcome of decisions from the Steering Committee regarding variables such as stakeholder involvement, functionality, and phasing.



- **Sponsors:** Those members of the HIE Steering Committee who have paid a subscription fee that contributes to the costs of implementing and administering the HIE. Sponsors may be granted decision-making authority when it comes to particular decisions related to functionality, cost, schedule, etc.
- **ACCEL HIE Steering Committee:** The members of this committee set the direction for the overall HIE, including finalizing mission and goals, scope, phasing, functionality, and other aspects of the exchange. To do this they must balance the perspectives and recommendations of the financial, technical, clinical, and project management teams.
- **Financial Advisory Team:** This group has been meeting since September 2006. Its role is to provide guidance and information to craft the financial plan and ongoing financial needs of the HIE. This includes identifying and prioritizing revenue and savings opportunities for the HIE, supporting the development of the financial model, and continuing to monitor revenues, costs, savings, and further financial opportunities over time.
- **Technical Advisory Team:** This group has been meeting since January 2006. Its role is to provide technical guidance on the development of the HIE. This includes, representing the needs of their own organizations with regard to the HIE, advising on the technical requirements of the HIE, assisting with the vendor procurement, exercising leadership during the technical aspects of the implementation, and providing technical monitoring and guidance moving forward.

- **Clinical Advisory Team:** A Provider Capacity Team has been meeting since June 2004 to cover a broad spectrum of issues. Initially the group focused on developing primary care networks, the clinical components of the CarePathways program, and the HIE. This ongoing team will be working on developing specialty care networks as well as providing continued clinical guidance on all aspects of the HIE, including: functionality, privacy, safety and quality, patient's rights, and confidentiality.
- **Privacy and Security Advisory Team:** This group meets to discuss the technical, legal, and philosophical aspects of privacy and security for the exchange.
- **Project Management Team:** This group serves as the administrative hub and integration function for the HIE. Its members manage all aspects of project planning and execution based upon the content and guidance provided by the Steering Committee and Advisory Teams. This group ensures effective communication and dissemination of information between teams and is responsible for the actual execution of the HIE.
- **Business/Financial Work Group:** This committee may have some members from the Financial Advisory Team, some designees from these participants, and additional contributors as identified. The group's charge will be to work on the business, operations, tactical, and financial issues associated with the project definition, vendor selection, implementation, and ongoing operations for the HIE moving forward.
- **Technical Work Group:** This committee may have some members from the Technical Advisory Team, some designees from these participants, and additional contributors as identified. The group's charge will be to manage and execute day to day the technical issues associated with project definition, vendor selection, implementation, and ongoing maintenance for the HIE. During the vendor selection process, this work group, along with the ACCEL IT PM, will be responsible for gathering requirements, gathering and presenting information related to the IT environments of stakeholders, and detailed RFP review and evaluation.

Each of these groups will meet regularly but at different intervals throughout the HIE development and execution. During the planning and implementation stages, these groups will meet with greater frequency. Once the HIE is up and running, periodic meetings will be required to address issues, updates, opportunities, and to check against metrics and outcomes. As these groups may be providing oversight for other ACCEL initiatives at the same time, it will be important to identify interdependencies and coordinate schedules.

Team	Time Commitment by Stage		
	Planning	Implementation	Maintenance
Steering Committee	Monthly	Monthly	Quarterly
Financial Advisory Team	Monthly	Every 2 months	Quarterly
Technical Advisory Team	Monthly	Monthly	Quarterly
Clinical Advisory Team	Monthly	Monthly	Quarterly
Privacy and Security Advisory Team	Monthly	Monthly	Twice per year
Project Management Team	Weekly	Weekly	Every two weeks
Business/ Financial Work Group	Monthly	Weekly	Monthly
Technical Work Group	Weekly	Weekly	Monthly

The questions identified on pages 47-48 will be made by the Steering Committee, but will require input from other teams. A suggested input table has been prepared below.

	Steering Committee	Financial Advisory Team	Technical Advisory Team	Clinical Advisory Team	Privacy and Security Advisory Team	Project Management Team	Business/Financial Work Group	Technical Work Group
Who should be involved?	X							
What are the mission and values of the HIE?	X							
How will decisions be made?	X							
What are the primary goals for the short and long term?	X	X	X	X				
What funding/revenue sources will be pursued?	X	X				X		
What functionality will be implemented first and how will the capabilities be phased over time?	X	X	X	X	X			
How will success be determined?	X	X	X	X	X	X		
What milestone and check points will require Steering Committee level monitoring?	X					X		
What level of transparency will the Steering Committee institute?	X							

XII. Conclusions

The HIE Collaborative established by ACCEL has an opportunity to be on the forefront of healthcare trends, especially for a mostly rural community. On a national scale, HIEs have the potential to shift the delivery, analysis, and financing of care. Since a fully automated medical information exchange is the vision for the National Health Information Network, the need for an HIE in the region is inevitable. By taking a proactive role in defining and establishing the HIE, EDC can shape the future of such an exchange for its own population.

Each region that establishes an HIE faces a unique set of stakeholders, priorities, opportunities, and challenges. The collaborative in EDC is fortunate to have a thoughtful group of participants that, although challenged to meet the financial requirements, are enthusiastic about the prospect of improving care in their community and taking a leadership role in this emerging trend.

As HIEs grow in number and are established in communities across the United States, there will be a growing body of data to document improving the quality of care as well as revenue and savings opportunities. Until then, the ACCEL HIE will need to move forward with a strong strategic vision and rigorous approach to cost management and performance monitoring to learn how these opportunities may play out in the county.

The HIE will be an important cornerstone in enabling ACCEL to fulfill its mission to make EDC “a healthier community by uniting, maximizing, connecting, and focusing our health resources.