Wisconsin eHealth Care Quality and Patient Safety Board
Financing Workgroup

Final Report
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GLOSSARY OF ACRONYMS

AHIC: American Health Information Community

AHRQ: U.S. Agency for Healthcare Research and Quality

BC/BS: Blue Cross/Blue Shield

CMS: U.S. Centers for Medicare and Medicaid Services

CPOE: Computerized Physician Order Entry

DHFS: Wisconsin Department of Health and Family Services

EHR: Electronic Health Record

EMR: Electronic Medical Record

ETF (or DETF): Wisconsin Department of Employee Trust Funds

HIT: Health Information Technology

HIE: Health Information Exchange

IT: Information Technology

HIMSS: Health Information Management Systems Society

MA: Medicaid

MGMA: Medical Group Management Association

NHIN: Nationwide Health Information Network

P4Q: Pay-for-Quality, also known as “pay-for-performance”

PHR: Personal Health Record

RHIO: Regional Health Information Exchange

ROI: Return on Investment

WCHQ: Wisconsin Collaborative for Healthcare Quality

WHIO: Wisconsin Health Information Organization

WHIE: Wisconsin Health Information Exchange

Wisconsin eHealth Care Quality and Patient Safety Board
Financing Workgroup Charter

Responsibilities: Develop options for funding electronic health records in all sizes of health care settings and for the operation of a statewide public-private health information infrastructure.

Assignments:

1. Articulate the value on investment and the business case for investment in health information exchange.
2. Identify existing and potential funding sources to support development of the ehealth infrastructure.
3. Examine approaches and successful examples of financial strategies to increase adoption of health information technology and ehealth data exchange from within the state and from other regions.
4. Propose financing strategies for funding health information technology and ehealth for both start-up and long term including the appropriate roles of the public and private sectors.
5. Identify specific financial actions required to support the first key product types (as identified by the Patient Care workgroup and approved by the Board), provide an estimate for the total cost of implementation of the first key product types and for total cost of implementation of the Wisconsin *eHealth Action Plan*.

EXECUTIVE SUMMARY

The business case for the adoption of health information technology (HIT) and participation in health information exchange (HIE) lies in promises of improved clinical processes and workflow that lead to safer, higher quality care, reduced administrative expenses, decreased clinical and administrative redundancies and improved coding. The system as a whole promises a more robust ability to report measures of quality and track outcomes. This will in turn strengthen purchasers' ability to design value-based purchasing that pays for quality – the truest return on investment for this endeavor.

But these goals will require substantial up-front investments in electronic health records (EHRs) and their interoperability among providers. To date, despite great promise and ambitious national plans, EHR adoption rates remain low, with less than 20% of U.S. physician practices fully automated, and only about half of hospitals even partially so. Fully operational health information exchange requires that HIT penetrate beyond physician offices and hospitals, pharmacies and laboratories, to include long-term care facilities and local health departments.

Wisconsin has a number of strengths that are likely to place it somewhat ahead on the natural curve of technology adoption: More than half of Wisconsin's physicians practice in large integrated group practices. Wisconsin is home to industry leaders in the arena of electronic medical records and HIT. Pioneering efforts are underway through the Wisconsin Collaborative for Healthcare Quality (WCHQ), Wisconsin Health Information Organization (WHIO), the Wisconsin Hospital Association's Checkpoint program, and four demonstration projects supported by grants from the federal Agency for Healthcare Research and Quality (AHRQ).

Nonetheless, to many physicians, the business case remains uncertain. Current reimbursement policies pay for diagnostics and treatment, not for outcomes or the handling of information; the gains in quality or reductions in cost are likely to first accrue to payers and purchasers. As well, small practices simply lack the $20,000-$40,000 per physician in up-front investment capital and lost-productivity needed to acquire and start-up an EHR system. Beyond physicians, advanced connectivity among the range of providers is an essential goal of the Wisconsin and national eHealth initiatives, and will certainly require significant investments.

National estimates of the costs to deploy HIT and HIE across the entire spectrum of health care in the U.S. range from $115 billion for the HIT costs [1] to $156 billion for the connectivity infrastructure required for a National Health Information Network (29), to $276 billion for all providers to achieve full HIE[2]. This suggests, through crude estimates allotting Wisconsin 2% of these costs in proportion with its share of the U.S. population, a need for $2.3 billion to as much as $5.5 billion investment in Wisconsin.

More refined Wisconsin-specific financial projections depend on estimates of the current level of HIT adoption among Wisconsin's physicians and hospitals. Beyond this, statewide interoperability will require resources to both fill the adoption gap and to adapt current and legacy systems.

Assume for now a hypothesized 35% adoption gap among physicians and hospitals. Wisconsin would then require resources in the range of $1 billion- $2.8 billion to build a universal EHR and information-sharing infrastructure through regional health information organizations (RHIOs). Such resources could come through several venues.

Most of the funds for HIT acquisition, start-up, and maintenance will continue to come through private investment, particularly as HIT becomes part of standard medical practice and the baseline

cost of doing business. As the market moves naturally in that direction, the prices for HIT should moderate. However, timely universal adoption and participation in HIT/HIE – including providers and facilities of all sizes and throughout the state – will require public and private sector seed money and incentives. As well, the success of this enterprise for all providers and their patients will require a continued redesign of payment systems to support value, quality, and outcomes.

The business case for HIT/HIE depends on support from multiple stakeholders. Purchasers may design pay-for-quality incentives for HIT adoption, with expectation about improved quality and more transparency to support value-based purchasing. Providers' business plans for HIT investment may rely on the hope of "billing optimization," which could be perceived by purchasers and payers as counter to their interests. Ultimately, stakeholder equity and the public good of reduced costs and improved quality will require that HIT go beyond what Sidorov and colleagues[15] refer to as "simple engraftment into the current health care system" -- to include re-engineered processes along with concomitant changes in the current reimbursement model.

Financing Workgroup Goal: Develop options for funding electronic health records in all sizes of health care settings and for the operation of a statewide public-private health information infrastructure.

Strategy: The best strategy for overcoming the barriers to HIT adoption is to increase the value proposition of EHRs.

Findings and Premises underlying Recommendations:

1. HIT/HIE is a public good and the investment in its development and operations should be partially funded from public sources.
2. Financing is needed for three levels of infrastructure: 1) appropriate HIT adoption and use by providers, 2) HIE through RHIOs or other exchange mechanisms at the regional level, and 3) statewide HIE.
3. A fully implemented HIE environment requires consistency of platforms and standards for inter-operability that do not yet exist, and must be developed at the national level.
4. The approach must be statewide, politically feasible, and consistent with federal initiatives.
5. The RHIO concept does not capture a standard set of information exchange activities or functions, and thus the acronym does not describe any specific model. Financing will need to target individual functions and step-wise, phased-in modular adoption of functions. The definition of the scope and functions of a state-level RHIO effort will determine the strategies for obtaining long-term sustainable financing.
6. Regional HIE can reduce the costs of system start-up as well as maintenance, through shared services and economies of scale.
7. Up-front subsidies may not support ongoing HIT use and investment. Ideally public and private reimbursement systems should be aligned to produce long-term return-on-investment (ROI), fostering long-term use and continued investment in HIT and HIE, while preserving market price pressures on vendors. Nevertheless, assistance with short-term capitalization of HIT may be needed for low-margin safety-net providers.
8. The plan will require phase-in over time, but HIE promotion should not crowd out resources to bring all providers to a baseline level of capability for internal clinical and patient safety systems and the internal capture and aggregation of data. As well, incentives must not crowd out private sector market developments and within-enterprise investment priorities.
9. Any State incentives for adoption must recognize and reward the investments already made by early adopters/investors/pioneers while promoting broader diffusion of technology.

10. Marginal costs must, to the greatest extent possible, correspond with marginal benefits. This will vary by type of provider/constituent, but each stakeholder needs to realize a proportional ROI. The financial contributions to fund the initiative should be equitable among the key health care stakeholders (public/private as well as provider, payer and purchaser) and proportionate to the use/benefit.
11. The system requires re-engineering processes and workflow, and adoption phase-in will incur productivity costs.
12. HIE must accommodate existing efforts and incorporate legacy systems. New systems must avoid creating multiple login environments where HIT exists but interface capability is currently lacking. At the same time, existing initiatives will need to evolve to meet the promise of emerging technology.
13. Organizations - particularly low-volume unaffiliated – may need help financing and implementing EHR systems. Many rural hospitals in particular lack interface engines and interface expertise, and often have limited IT resources in house. They will need interfacing hardware, software, and expertise resources to participate in HIE.
14. Costs of participation in HIE need to be scaled for smaller rural communities, with consideration of the relative benefits in various markets.
15. HIE will allow for flexible flow of clinical data across systems and referral centers, rather than limiting access within existing referral relationships and proprietary networks.
16. The actual RHIOs will develop business plans and a clear value model for each HIE function they pursue, with specific capital and operating expenses and potential revenue sources identified.

Role of Public and Private Sectors:

- State government should use its leverage as a purchaser and payer to drive HIT adoption.
- State government programs, including Medicaid, ETF, biosurveillance, and public health services, should tie in with the state-level HIE architecture rather than create stand-alone, parallel (silo) data systems. Integration of such programs into state and regional HIE can minimize redundancies and disruptions to clinical workflow. Savings and benefits should be returned to participants in the form of economic or other incentives for providers to adopt and participate in the system.
- The *eHealth Action Plan* should leverage Wisconsin's strength and talent in the HIT industry to develop non-proprietary/open source EHR products, to improve the value of what is delivered, and to assist with customizing or adapting it for application.
- The *eHealth Action Plan* should pursue EHR group purchasing strategies, as well as possible contributions from payers that are potential beneficiaries of providers' use of HIT.
- Private industry, health care organizations and purchasers all have a key role in HIE development. Purchasers and payer organizations should develop and implement value-based purchasing strategies, including pay-for-quality programs that encourage HIT adoption and use. Such strategies must coalesce around common quality, value, safety and data standards.
- Savings in one sector may need to be shared with others to overcome early mismatches between the costs and benefits of those joining the exchange.

Recommendations on Specific Funding Sources:

The eHealth Financing Workgroup recommends that the Governor and legislature consider the following measures to support the goals of Wisconsin's *eHealth Action Plan*.

Revenue Bond:

- State Legislature authorize a call for officially designated RHIOs or like structures;
- RHIO would be eligible for financing HIE through state bonding authority;

- State must pay its proportionate share (ETF, Medicaid) if other sectors participate;
- Bond issue would be paid by users' revenue, not repaid by state GPR (general purpose revenue, i.e., tax dollars).
- State should pursue the feasibility of a tax-exempt lease as a preferred financing approach.

Shared Services: Wisconsin's eHealth Initiative, as a public-private collaboration, could coordinate/integrate key and necessary administrative and other activities that maximize efficiencies and reduce total cost/resource allocation across various initiatives. Among potential immediate opportunities for collaboration: legal, insurance, IT-data elements and architecture, HIPAA regulations, accounting, vendor RFP processes, evaluation, and acquisition.

Tax Credits and Exemptions:
The U.S. Department of Health and Human Services recently issued new regulations that relax the restrictions (known as Stark and anti-kickback rules) on donations of e-prescribing software and hardware to physicians. The Wisconsin legislature and Governor should consider adoption tax exemptions on donated IT systems consistent with these changes and with related federal tax exemptions.

In addition, Wisconsin's and other states' legislatures have considered creating an income and franchise tax credit for health care providers in an amount that is equal to or some proportion of the amount that the health care provider pays in the taxable year for information technology hardware or software that is used to maintain medical records in electronic form. As well, Wisconsin might create an individual and corporate income tax exemption for interest on bonds or notes issued by the Wisconsin Health and Educational Facilities Authority for purposes related to the purchase of information technology equipment by health facilities.

Medicaid and ETF Incentive Payments
Several states around the country provide examples of the kind of leverage the State of Wisconsin might exert in its role as a major purchaser of health care services. For example, the legislature in Wisconsin, as well as in other states, have considered directing state Medicaid agencies to make an annual incentive payment to hospitals that establish and maintain a physician order entry record system.

Blue Cross/Blue Shield Endowment: Wisconsin's two medical schools, the University of Wisconsin – Madison and the Medical College of Wisconsin, are stewards of the endowment funds that resulted from Wisconsin BC/BS conversion to a private shareholder corporation. These funds are guided by a five-year plan, approved by Wisconsin's Commissioner of Insurance. Both funds have developed a significant reserve. The next five-year plan is being developed and scheduled to take effect in 2009.

- The eHealth Financing Workgroup recommends that the Insurance Commissioner and the two medical schools carefully study Wisconsin's *eHealth Action Plan* and consider strategic and programmatic investment opportunities, recognizing the shared goals and mission between the two enterprises.

Recommendations for Targeted Financing:

- ***Focus on smaller, rural, and safety net providers:*** Direct resources to those stakeholders who must be engaged but who may lack the resources to contribute financially (safety net providers, Federal Qualified Health Centers (FQHCs), Rural Health Centers (RHCs), Critical Access Hospitals (CAHs), local health departments).
- ***Action Plan Function Phase-In:*** Treat solo and small-practice physician offices as a special case; pursue their conversion on a "special track" and special adaptation timeline basis.

- ***Demonstration Project Funds:*** Provide funds for demonstration projects that model collaboration in HIT purchasing, support and information exchange.
- ***Focus on Early Wins:*** Target investments first at functions that promise early wins, such as e-prescribing and disease registries.

The Wisconsin Department of Health and Family Services has begun taking steps in the direction recommended by this report. In October 2006 DHFS submitted a Medicaid Transformation Grant proposal to federal CMS that includes three provisions consistent with the state eHealth financing strategy: 1) operational and technical assistance to advance the adoption of EHRs by safety net providers; 2) HIE focused on the Medicaid and General Assistance Medical Program (GAMP) populations in Milwaukee County, and 3) pay-for-quality incentives to encourage standard data collection and quality reporting.

Financing and Investment in HIT/HIE

Introduction and Background

The business case for the adoption of HIT and participation in HIE lies in promises of improved clinical processes and workflow that lead to safer, higher quality care, reduced administrative expenses, decreased clinical and administrative redundancies and improved coding. The system as a whole promises a more robust ability to report measures of quality and track outcomes. This will in turn strengthen purchasers' ability to design value-based purchasing that pays for quality – the truest return on investment for this endeavor.

Upon launching the "Decade of HIT" federal officials asserted that the eHealth initiatives could reduce medical spending by 15%-23%. Nonetheless, provider adoption has been slow, challenged by high up-front and maintenance costs, weak evidence of ROI, misalignment of incentives in reimbursement system, and perception that patients and payers reap rewards that providers pay for.[1, 2,3,4,5,6,7,8,9]

The federal Agency for Healthcare Research and Quality in 2006 issued a report[1] on its interviews with officials from eight of its funded HIT/HIE projects. All respondents identified the following factors as critical to initial planning and early implementation stages: the state's role as a catalyst (including leadership support); broad stakeholder inclusion (including early engagement of physicians and physician champions); clear value proposition with early "wins"; technological interoperability.

Most projects have embraced technology, with considerable variation. These include clinical messaging (delivering lab results and other documents), EHR, clinical data repository (CDR), telemedicine technology, eRx, technologies to support medication management, and chronic disease or immunization registries. There appears to be a high priority placed on CDRs by State-driven projects, perhaps to support the state's biosurveillance and public health tracking needs. HIEs remain many and varied, with minimal inter-HIE coordination to date.

Information on financing varies significantly and is often unavailable. Finance details are limited. Some level of funding information (either funding sources or award amount) was available, with project funding levels ranging from $200,000 to $1 billion over foru years. However, in most cases, details about the projects' funding and financing strategies are inconsistent, incomplete, and often unavailable. It is also clear that most funding comes from federal and state governments, followed by foundation grants and private sector financing.

Funding of individual projects ranges from $50,000 to $14.5 million, including in-kind support. In terms of State HIE funding across projects in a single State, New York was an outlier with $1 billion in capital funds to promote improvements to the state's health care system. Most state and HIE projects rely on a mix of funding streams (e.g., federal, state, foundation, in-kind) but all are seeking initial funds and models for sustainable funding.

Long-term Sustainability and Financing

Long-term sustainability and financing appear to be the most challenging and, in most cases, unknown aspects of these initiatives. While many of the interviewees discussed their project's progress and success within the planning stages or in moving from planning to implementation, the majority of interviewees could not articulate their project's long-term sustainability or tested revenue

models. Some initiatives are discussing a variety of alternatives; many are looking to other programs for models and insights, while for some, financing and sustainability remain notable obstacles.

Many of the longest-operating and self-sustaining HIEs generate revenues from clinical messaging, charging back from data senders like laboratories some of the savings on results delivery in order to sustain and expand operations. Others consider a data fee model where subscribers pay a fee to access the data and participate in the HIE.

Many of the initiatives do not have fee structures or revenue models in place, yet the interviewees stressed that once they understand how HIE will benefit the varied stakeholders and individual organizations they will be able to better understand how fiscal responsibility can be equitably shared. Ultimately, HIE projects need to demonstrate that HIE will improve care for patients and make the processes easier, more efficient, and more effective for stakeholders, particularly physicians. Questions about how much, if any, consumers will pay for access to EHRs or PHRs also loom as untested territory, although surveys suggest a willingness of consumers to do so.

An April 2006 AHRQ report[6] concluded that "[u]sing existing published evidence, it is not possible to draw firm conclusions about which HIT functionalities are most likely to achieve certain health benefits – and the assessment of costs is even more uncertain...

> "Existing evidence is not sufficient to clearly define "who pays for" and "who benefits from" HIT implementation in any health care organization – except those, such as Kaiser and the VA, that are responsible for paying for and delivering all the care for the defined population."

Clear Value Proposition with Early "Wins"

Many project leaders indicated their commitment to identifying the "value proposition" for all involved stakeholders and saw this as essential to enabling successful implementation. Many stressed that the importance of finding opportunities for quick successes and demonstrating short-term wins cannot be overstated.

> "Try to find an easy first (project) that showcases the ROI or real benefit, easily and quickly."
> - AHRQ survey respondent

So it is that adequate upfront financing and sustainability ranks as one of the top challenges to HIT/HIE initiatives. In 2005, the National Business Coalition on Health[10], identified several critical "market failures" that stifle the adoption and use of HIT, including the following:

- Payers, including Medicare, do not reward efficiency or quality, thus creating a negative "business case" for the typical HIT adopter (especially small organizations). The typical physician loses $36,000 from implementing an EHR.
- First movers face a disadvantage due to negative "network externalities" that result in short-term losses due to a lack of standards and interoperability.
- A high failure rate (30% or more) among those implementing EHRs. The quality of expertise available to help is highly variable.
- Limited capacity for interoperability, as standards are not rigorous and there is no viable infrastructure for HIE.

The challenges are many: The systems require large up-front capital expenditures. Payers do not directly compensate institutions or providers for use of the system, nor currently do they receive

direct compensation for the resulting higher quality and safer care. The literature repeatedly cites the difficulty in assessing the return on investment.

Beyond the large up-front investment, chief among the challenges related to financing and incentives stands the oft-cited misalignment between who bears the costs and who gets the benefits from HIT and HIE. Physicians typically bear the significant investments in EHRs, but the benefits, including improved clinical outcomes and fewer adverse events, accrue to patients and the payers of health insurance premiums. A 2005 NIHIT Briefing reports that "hospitals and providers foot 97% of the ongoing costs (of information exchange), yet receive just 56% of the potential benefits. The remaining benefits are dispersed among payers and other stakeholders."

The current reimbursement environment ties provider income to productivity rather than quality. Physicians must rely on the hope of better coding, the capture of increased billing revenues and reduced administrative expenses to recoup their investments in HIT. But providers harbor significant concerns regarding the impact of HIT initiatives on productivity, and up-front losses during the transition phase from paper-based to computer-based systems.

Even for those who are ready to make the transition, the apparent lack of a sustainable business model for HIT/HIE may preclude the ability to secure upfront financing for its investment.

Meanwhile, the industry suffers from a lack of data standards, making it difficult to manage the myriad of existing homegrown and vendor systems. The building of HIE requires integration of currently non-interoperable legacy systems. And many providers await a more stable vendor industry climate before taking the investment risk. Limited interoperability also compromises the business case, as typically EHRs alone provide only limited benefits.

With regard to HIE infrastructure, the most successful organizations to date tend to be funded by government grants. More than 70% of RHIO income, on average, come from grants and other forms of contributed income. [11] It is not unrealistic to expect as much as one-third of total RHIO revenues from government grants and philanthropy. While this does not resemble a commercial enterprise or fee-based nonprofit health care provider, this business model is consistent with other non-profit organizations and appropriately reflects RHIOs' role as a public good. Grants may supplement, but are unlikely to be a viable source for ongoing funding.[12] HIE organizations must seek sustainable funding beyond grant money.

Barriers to Adoption
- Substantial initial costs and lack of capital resources to invest in HER.
- Practices are not convinced EHRs will improve their performance.
- Lack of good information about the return on investment in terms of cost and quality.
- Misaligned incentives and payment mechanisms.
- Lack of certification and standardization.
- Privacy concerns.

Initiatives at the federal and state level are aimed at addressing theses challenges. Wisconsin's *eHealth Action Plan* considers financing and incentive strategies intended to

- Create incentives for EHR adoption;
- Reduce the risks involved in investing in EHRs;
- Consider implementing first types of exchange associated with clear-cut ROI and revenue production in other communities, such as clinical messaging;

- Promote the diffusion of EHRs in rural and underserved areas; and
- Interconnect clinicians and other service providers through regional HIEs which can ultimately be linked by a Nationwide Health Information Network (NHIN).

Return on Investment for HIT and HIT: The Evidence

- The business case and ROI for electronic health records, HIT and HIE have not been well established in practice but only in theory, through modeling and projections in the literature.
- The literature reports a wide range of costs associated with HIT; fiscal estimates of implementation will reflect that range, but also note that costs will decrease over time.
- A 2005 RAND analysis[13] estimated that national adoption of the EHR could lead to "more than $81 billion" in annual savings.
- But Goodman and colleagues[5], also writing in Health Affairs: "It is unrealistic to hold out widespread adoption of HIT as a net cost saver." "Do It for the Quality."
- Walker and colleagues[14] estimated that information exchange across providers, hospitals, public health, and payers could save $77.8 billion annually.
- Writing recently in Health Affairs, Sidorov and colleagues[15] conclude: "The EHR's greatest promise arguably lies in the support of [patient centeredness, shared decision making, teaming, group visits, open access, outcome responsibility, the chronic care model, and disease management], versus the prospect of less efficiency, greater costs, inconsistent quality, and unchanged malpractice burdens resulting from a simple engraftment into the current health care system."
- Newly released industry-based reports point to low-hanging fruit: One study reports that utilization of the Patient Clinical Summary (PCS), a payer-based EHR, in the Emergency Department resulted in cost savings of $604 per encounter.[31]

HIT Business Case

- The published literature reports a range of both experience-based and estimated start-up and maintenance expenses, including hardware, software, training, personnel, productivity effects. Among these:
  - Solo and small group practices per clinician cost: $44K start-up, $8.5K/year maintenance[16]
  - Medical Group Management Association (MGMA) average per clinician cost: $33K start-up, $1.5K/year maintenance

ROI gains by category [16]

- The average practice paid for its EHR in 2.5 years and gained more than $23,000 in net benefits per FTE providers. Gross financial benefits $33,000/FTE/year (range $1,000-$42,000):
  - Increased coding levels – 52% of benefits - $17,000 average.
  - Efficiency related - 48% of benefits- average $15,000 per FTE provider (40% from decreased personnel costs and 8% from increased patient visits).

Productivity gains:

- Lowering personnel costs: EHR can enable clerical staff reductions amounting to $13,000 per physician per year.[16]
- But one analysis shows EHR increased documentation time among physicians by about 17%, while Computerized Physician Order Entry (CPOE) increased it by 98%.[17]

- Kaiser Permanente EHR resulted in a 5%-9% decrease in office visits replaced by telephone contacts. [18]

Billing Optimization:

- EHR can "auto-populate or scour the medical record to justify a greater intensity of services." "Increased coding levels," better "capture of charges" and fewer "billing errors" can produce ROI.[16,21]
- Arguably, as physicians are prone to under-documentation, EHRs can increase health care costs by billing more for the same services without any corresponding increase in quality.[15]
- While this increased income for clinicians does not generate net savings for the system overall -- and may actually result in higher payer costs for same services --.it can serve to offset other sources of negative ROI for clinicians.

Quality and Safety:

- Evidence is mixed. Physicians might resent the loss of professional autonomy or have limited tolerance for on-screen prompts.
- "The EHR has yet to be quantified or consistently used to reduce malpractice premiums or health care costs."[15]

HIE Business Case

A detailed financial analysis prepared for Santa Barbara County[19] reports several findings that may be generalizable. At the same time, it should be noted that the SBHCE has not achieved successful implementation despite starting with considerable capitalization.
Nonetheless, the analysis shows the following:

- Expect "positive returns to HIE in all except small communities (e.g., one hospital and less than 100 physicians), even they are ignoring improvements in clinical efficiency. In [these] one-hospital markets, there is little difference between enterprise-data access and regional data sharing, so...these markets do not have a business case for sharing data beyond the enterprise."
- At face value, HIE provides moderate ROI. Overall magnitude of return is relatively low.
- Key variable is physician adoption and use: ROI is completely related to lowering the volume of manual data handling.

The Santa Barbara analysis also models an estimated ROI by constituent in medium and large regions. Its findings are as follows:

- Each constituent benefits from providing data to any set of physicians on an enterprise level (stand-alone Web-enablement or one-to-one interaction), without "regionalization."
- An organization gains benefits from participation in the regional network, arising from having a single place for physicians to get all relevant data for their patients (i.e., many-to-many interaction).
- Physician offices get a very high rate of return in the form of office efficiencies.
- Imaging centers have a slightly negative return from regional component, but this is balanced by a positive return from stand-alone Web-enablement.
- Every organization has positive overall returns from regional data sharing.

The Santa Barbara model embraced the premise that peer-to-peer technology can scale the benefit to the cost of operation and carries little overhead. However, others have argued that the "peer-to-peer" model is not optimal for ROI and for provider adoption compared to other models. The heavily promoted and oft-cited Yasnoff eHealth Trust Model effectively makes the case that a centralized

model more effectively delivers ROI while efficiently meeting data needs. Meanwhile, there are not yet examples of "scattered" model HIEs (as opposed to hybrid or centralized-storage models) that are operational and self-sustaining.

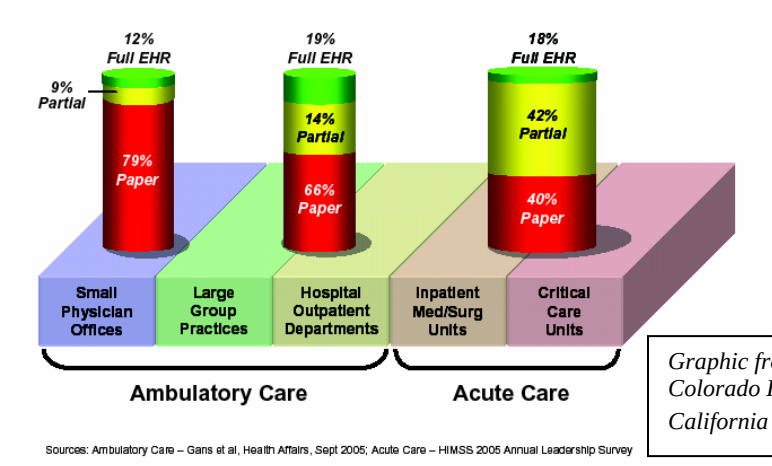
Status of EHR Adoption and Diffusion

- EHR adoption rates remain low among physician groups.
- EHR adoption rate directly correlates to size of medical group practice.

The amount of public and private funding needed to bring Wisconsin to 100% HIT adoption will, of course, depend on the current rate of adoption and penetration of HIT/HIE. Given the lack of state-specific data, the eHealth Financing Workgroup turned to the national literature for estimating the "adoption gap" that Wisconsin might be facing. The literature provides a wide range of estimates and approaches to measuring "adoption."

The Medical Group Management Association (MGMA) widely-cited 2005 study[20] found that 14.1% of all medical group practices use an EHR and 11.5% have an EHR fully implemented for all physicians and at all practice locations. Only 12.5% of medical group practices with five or fewer full-time-equivalent physicians (FTE) have adopted an EHR. The adoption rate increased with the size of practice: groups with 6 to 10 FTE physicians reported a 15.2% adoption rate; groups with 11-20 FTE physicians reported an 18.9% adoption rate; and groups of 20 or more FTE physicians had a 19.5% adoption rate. (The RAND corporation,[21] consistent with MGMA, reports that 15%-20% of physician offices and 20%-25% of hospitals had adopted EHRs.)

MGMA further reports that about 13% of groups were in the process of implementing an EHR, 14.2% said implementation is planned in the next year, and 19.8% said implementation was planned in one to two years. The remaining 41.8% have no immediate plans for EHR adoption. Among those with no immediate plans for implementation, the difference between large and small groups is striking—47.8% of practices with five or fewer FTE physicians compared with only 20.7% of practices with 21 or more physicians. If plans are carried out as reported, MGMA estimates that about 60% of practices, and 80% of the largest practices (21 or more physicians), would have adopted EHR technologies two years from January-February 2005. Still, nearly half of practices with five or fewer physicians reported no plans to implement EHR within the next two years.



Graphic from Karp, S.
Colorado Health Care and the Promise of HIT.
California Health Care Foundation, April 2006.

Burt and colleagues,[22] using 2001-2003 data, reported slightly differing rates of adoption. They found that, among regions, Midwest physicians had the highest overall existing rate of EMR adoption, at 23.7%, with 20-25% reporting plans to invest in EMR in the next 12 months.

The link between EHR adoption and practice size will be key to understanding the adoption curve in Wisconsin. Wisconsin has a number of strengths that are likely to place it somewhat ahead: More than half of Wisconsin's physicians practice in large integrated group practices. Wisconsin is home to industry leaders in the arena of electronic medical records and HIT. Pioneering collaborative efforts are underway among providers and purchasers.

Wisconsin also has well-developed HIE initiatives underway. The federal AHRQ has awarded $3.3 million in Wisconsin to help hospitals, providers, and health care systems plan, implement and demonstrate the value of health IT. The Wisconsin Collaborative for Healthcare Quality (WCQH) and the Wisconsin Health Information Organization (WHIO), as well as Milwaukee's RHIO (the Wisconsin Health Information Exchange), provide a private sector foundation upon which to build the state's HIE infrastructure.

In 2005, Wisconsin enacted Act 228, which authorizes and directs funds for the Department of Employee Trust Funds (ETF) and DHFS to contract jointly with the WHIO for specified data collection. The WHIO is a nonstock corporation formed specifically to create a centralized claims repository. The contract requires WHIO to analyze and publicly report the health care claims information with respect to the cost, quality, and effectiveness of care, in language that is understandable by laypersons.

$3.3 Million in AHRQ Demonstration Grants to Wisconsin

Planning for a Rural Prescription Medication Network
St. Joseph's Hospital, Marshfield, Wisconsin
Description: Develops a shared electronic repository for patient-level prescription medication data that enables real-time access for patients receiving health care services and plans a model system design to electronically link prescription medication data across hospitals and physician practices. Total one-year funding: $167,781

Developing Shared EHR Infrastructure in Wisconsin
Rural Wisconsin Health Cooperative
Description: Plans the implementation of a common infrastructure for an integrated EHR and

CPOE to enhance access to clinical data, develops a workable model/plan for standards-based data sharing to allow multiple providers using disparate information systems to access patient information, and creates a quality measurement and enhancement tool that would measure improvements in quality and patient care. Total one-year funding: $192,000

Improving Patient Safety/Quality with HIT Implementation
St. Joseph's Community Hospital, West Bend, Wisconsin
Description: Implements an Epic health IT system and diffuses the system community-wide; identifies the prevalence of medication errors, near misses, and preventable adverse drug events; assesses costs and customer satisfaction both before and after implementation.
Total three-year funding: $1.5 million

CPOE Implementation in ICUs
University of Wisconsin-Madison
Description: Assesses the implementation of CPOE systems in six intensive care units (ICUs) and evaluates the value and outcomes of patient safety involving medication errors; quality of care; end users' job tasks, perceptions, and attitudes; and financial impact.
Total three-year funding: $1,455,066

EHR Adoption Through 2005: Based on Best Estimates from EHR Surveys
Source: Jha A, Ferris TG, et al. [30]

	Range from medium- or high-quality surveys (%)	Best estimate based on high-quality surveys (%)
EHRs in physician offices	17-25	24
Solo practitioners	13-16	16
Large physician offices [a]	19-57	39
EHRs in hospitals	_ [b]	None
CPOE in hospitals	4-21	5 [c]

Notes: No surveys of hospitals were rated high or medium in both methodology and content. CPOE is computerized physician order entry.

[a]"Large" is defined as 20 or more physicians by one study, with an estimate of 39%: CW Burt and JE Sisk, "Which Physician Practices Are Using Electronic Medical Records?" Health Affairs 24, no. 5(2005):1334-1343. It is defined as 50 or more physicians by another study, with an estimate of 57%: AM Audet et al., "Information Technologies: When Will They Make It into Physicians' Black Bags?" Medscape General Medicine 6, no. 4(2004:2.

[b] Not available.

[c] Based on a survey rated as medium in quality.

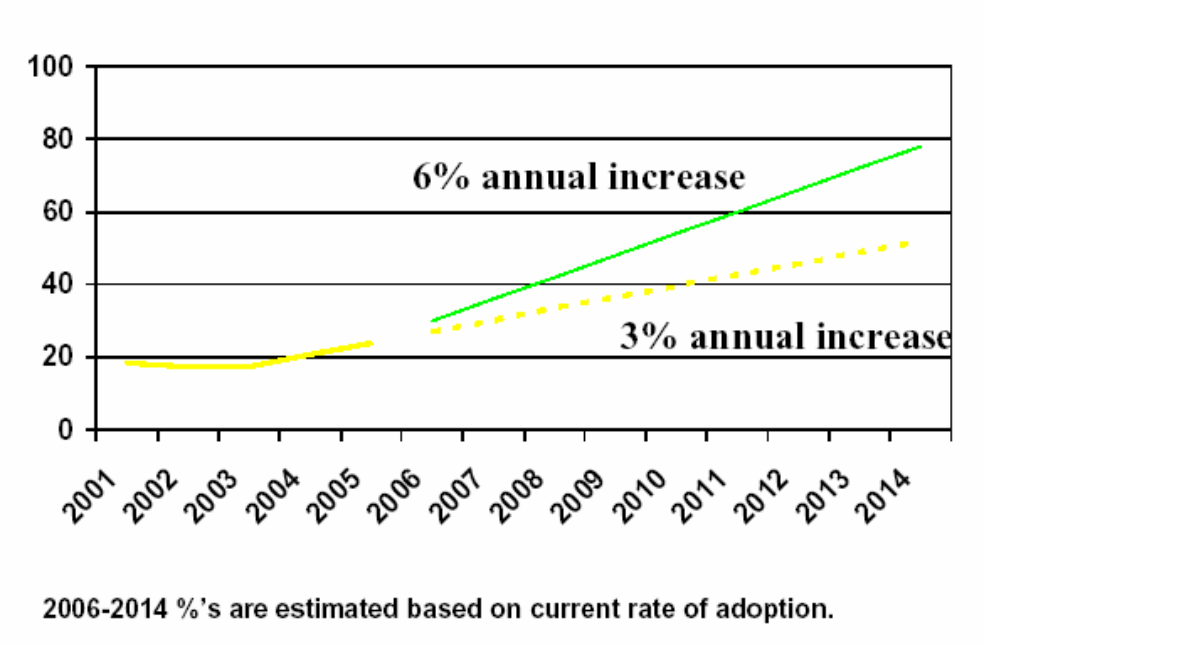
EMR Use: National Ambulatory Medical Care Survey, 2005
(presented by JE Sisk and C Burt, AHIC, September 12, 2006)

Practice Characteristic	% Distribution of all Physicians	% Physicians Reporting Full/Partial Use of EMRs
All physicians	100.0	23.9
Size (# of physicians)		
Solo	38.5	16.0
Partner	11.3	20.2
3-5	25.4	25.3
6-10	12.9	33.8
11 or more	9.7	46.1
Ownership		
Physician/physician group	83.3	20.3
HMO	2.9	66.5
Other	13.9	37.1
Region		
Northeast	20.9	14.4
Midwest	21.4	26.9
South	34.9	21.7
West	22.7	33.4

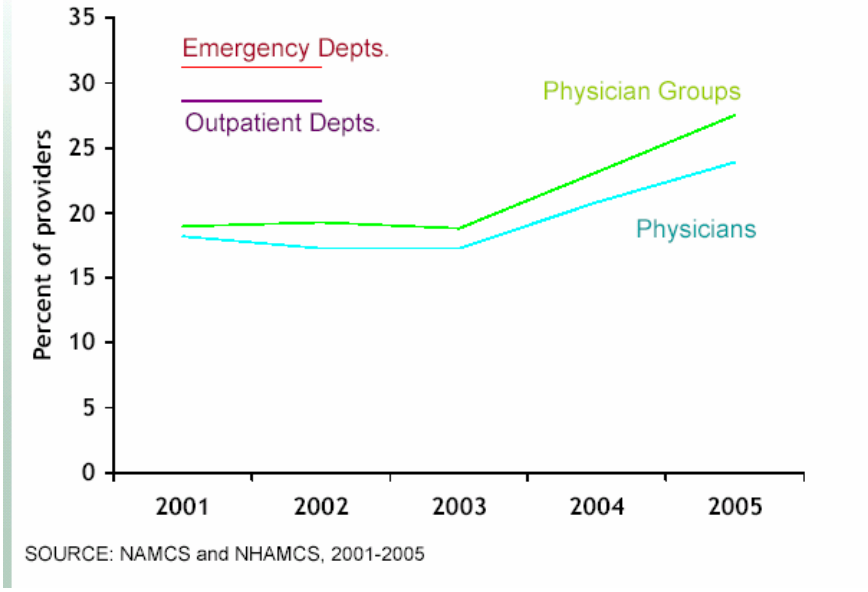
Wisconsin Adoption level using various national rate estimates for physicians by practice size and for hospitals

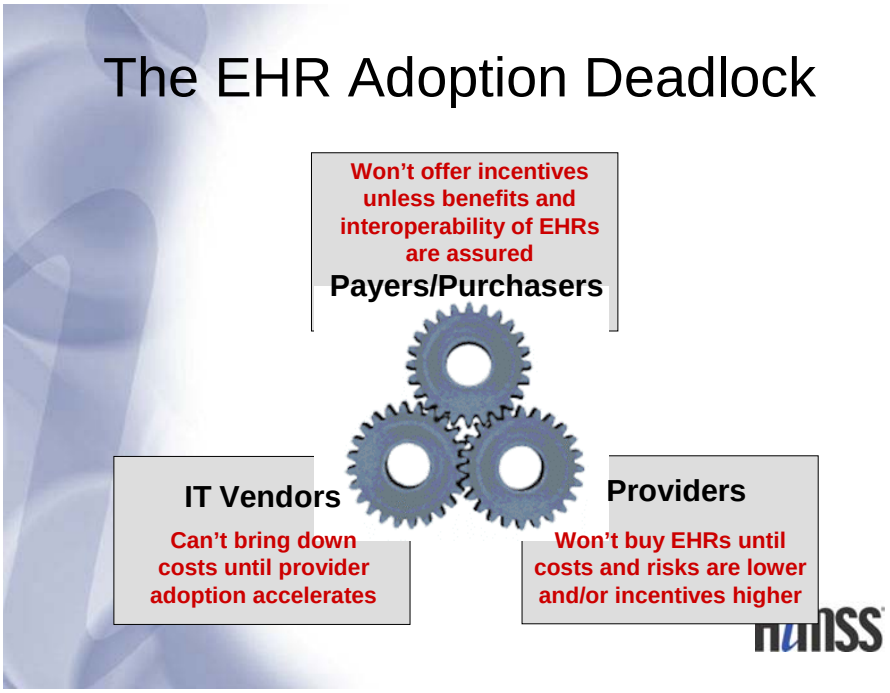
	Adoption Rate	Wisconsin physician Practice size	Wisconsin (% of 14,000)	Wisconsin number with EHR
MGMA 2005				
<5 physicians	13%	8%	1,120	146
6-10 physician	15%	10%	1,400	210
11-20 physicians	19%	11%	1,540	293
>20 physicians	19%	71%	9,940	1,889
MGMA 2005 overall				2,538 (18% of all physicians)
Midwest overall rate 2001-2003	23.7%		14,000	3,318
Gan, 2005				
<20 physicians	19%	29%	4,060	771
>20 physicians	33%	71%	9,940	3,280
Gan 2005 overall				4,051 (29% of all physicians)
MGMA two-years out				
<20 physicians	40%	29%	4,060	1,624
>20 physicians	80%	71%	9,940	7,952
Two-years out overall				9,576 (68% of all physicians)
	range			
Hospitals	25%-60%		145	36 - 87

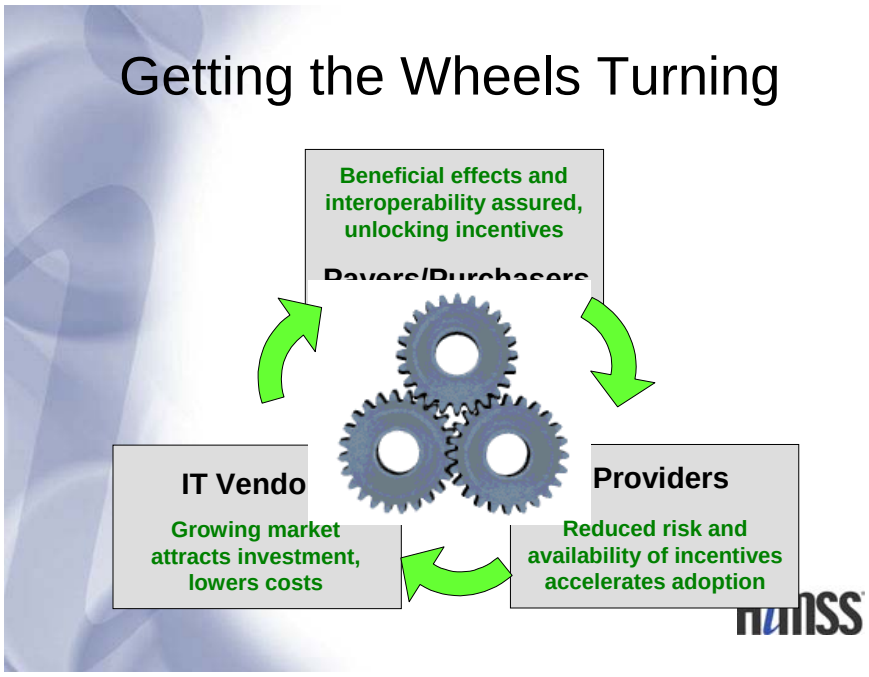
Projected Diffusion of EHRs Among Office-Based Physicians: 2001-2014
graphic presented by D. Blumenthal, September 12, 2006, American Health Information Community



Diffusion of EMRs
(graphic presented by JE Sisk & C Burt, AHIC, September 12, 2006)







Source: Jeff David, HiMSS

Determinants of HIT Adoption, Functionalities and Phase-In

HIT adoption remains limited and variable across key stakeholders. The 2005 MGMA survey[20] reported that more than 97% of the respondents with an EHR reported their system had functions for patient medications, prescriptions, patient demographics and visit/encounter notes. Less than 65% reported their EHR provided drug formulary information or clinical guidelines and protocols. Eighty-three percent of respondents said their EHR was integrated with their practice billing system.

Another more recent survey[23] of eight major stakeholder groups in two key markets, overseen by a national expert panel of the preeminent leaders in the HIT arena, found that use of HIT appears to be predominantly driven by financial functions. Adoption of functionalities to support financial reimbursement far exceeds adoption of those to support safety and high quality clinical care. Results viewing was the most widely adopted among the clinical functionalities. Other innovators and early adopters generally adopted other clinical functionalities. Inpatient EHRs and patient –doctor communication were the least commonly adopted clinical functionalities.

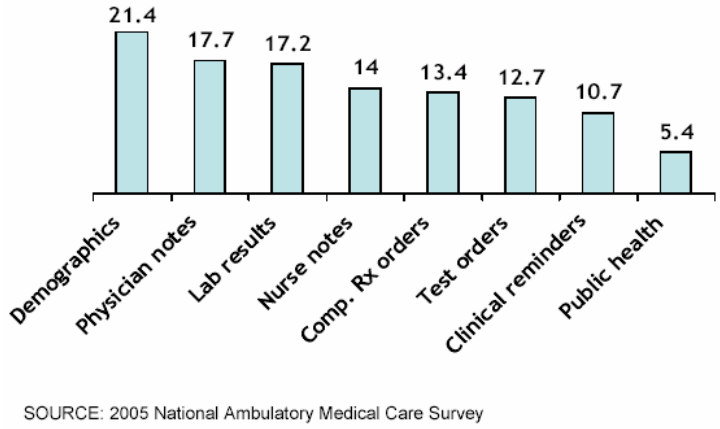
Most recently, Jha and colleagues[30] 2006 meta-analysis found that, while about one-quarter of physicians were using an EHR as of 2005, fewer than one in ten physicians were using EHRs with functionalities such as electronic prescribing. Only 5%-10% of hospitals had CPOE.

National Estimates of HIT Adoption by Functionality

	Result Viewing	Inpatient EHR	Inpatient CPOE	Ambulatory EHR	Ambulatory CPOE	Electronic Prescribing	Claims	Eligibility	Patient-Doctor Communication
MD practices	24%			9%	5%		79%	11%	6%
IDNs	61%	20%	15%	13%	10%		90%	28%	8%
Stand-alone hospitals	55%	12%	9%	7%	6%		85%	19%	4%
SNF/Rehab hospitals	8%	1%	1%				77%	17%	1%
Home health agencies	6%			5%			73%	16%	2%
Laboratories	86%						90%	47%	6%
Pharmacies						5%	93%	76%	26%
Payors							94%	86%	

Poon, et al. 2006

Percent of Office-Based Physicians Using Selected EMR Features
(graphic presented by JE Sisk & C Burt, AHIC, September 12, 2006)



SOURCE: 2005 National Ambulatory Medical Care Survey

At the state level, North Carolina's plan outlines a three-stage phase-in of functions, as follows:

Phase I: point of care medication management, automated refill, formulary and benefits information, and eRx
Phase II: e-lab and radiology results ordering and results at point of care
Phase III: EHR

Nationally, HIE functions most commonly pursued in the first two years are as follows: clinical messaging, medication reconciliation, public health outbreak surveillance, electronic referrals and authorizations, electronic signature, e-prescribing, P4P/quality data reporting, electronic billing support.[24]

With these points of information, the eHealth Financing Workgroup has identified the following as the potential low hanging fruit for early wins in Wisconsin:

- E-prescribing, medication management
- Clinical messaging of laboratory and other results
- Disease registries and on-line tools for chronic disease management
- Emergency room data transfer

However, it is important to note that fully operational health information exchange requires that HIT penetrate beyond physician offices and hospitals, to include long-term care facilities and local health departments. This more advanced stage of connectivity is an essential goal of the Wisconsin and national eHealth initiatives and will certainly require significant investments.

Principles for HIT financing and incentives

The National Business Coalition on Health in 2005 adopted principles on HIT financing and incentives, several of which have been endorsed by Wisconsin's eHealth Financing Workgroup. Principles endorsed by the Workgroup include the following:

- Strive to ensure a "shared gain" across organizations, as there is a high degree of interdependence.
- Think of data exchange as a commodity, not a proprietary function.
- Look for minimally invasive approaches that do not require the "ripping and replacing" of existing systems.

- Use a neutral third party as a convener and process manager, particularly with respect to organizational issues and governance structure.
- Eliminate the "free-rider" effect by ensuring that those who benefit from the investment pay for it (and vice versa).
- Elicit the support of regional leadership, and work with those leaders to address governance issues thoughtfully.
- Seek funding for planning and prototypes.
- Focus on incremental initiatives that have a business case within the local community; these initial steps put a community on the path to longer-term goals of full interoperability.
- Integrate standards, interoperability, and connectivity into the incentives.

What is Needed for HIT Adoption and Use?

The eHealth Financing Workgroup views effective HIT adoption as a multiphase process that requires the following:

- Data standards and standardized data.
- High quality, affordable systems.
- Assistance in selecting systems and revising care delivery processes to use them effectively.
- Incentives, including financial incentives and recognition of performance, such that purchasers pay for quality rather than for quantity of care.
- Gradual roll-out of functions based on ROI and a quest for "early wins."

Specific financial interventions are needed to
- defray upfront investment costs and initial productivity losses:
- provide financial incentives to clinicians to use HIT

The eHealth Financing Workgroup has developed a model to determine the potential total social costs of the eHealth initiative – those borne by health care providers, payers, purchasers, and the government. These costs include the cash outlays and staff time or productivity impacts associated with the following:

1. Central coordination and RHIOs.
2. Purchasing/upgrading EMR software and hardware and implementing the software and hardware, by physicians and hospitals.
3. Ongoing annual support, maintenance and repair costs.

The return on investment, or ROI, is then measured as the value achieved when benefits of HIT/HIE are balanced against these costs. The value includes a number of elements in the financial, clinical, and organizational arenas, as summarized in the table below.

The Three Dimensions of Value for Health Care IT[25]

Financial

- ***Cost reductions*** issuing from decreased administrative clinical staffing and resource requirements (e.g., elimination of paper chart pulls and transcription services).
- ***Revenue enhancements*** resulting from improved charge capture and charge entry to billing times.
- ***Productivity gains*** stemming from increased procedure volume, reductions in average length of

stay, and increased transaction processing rates.

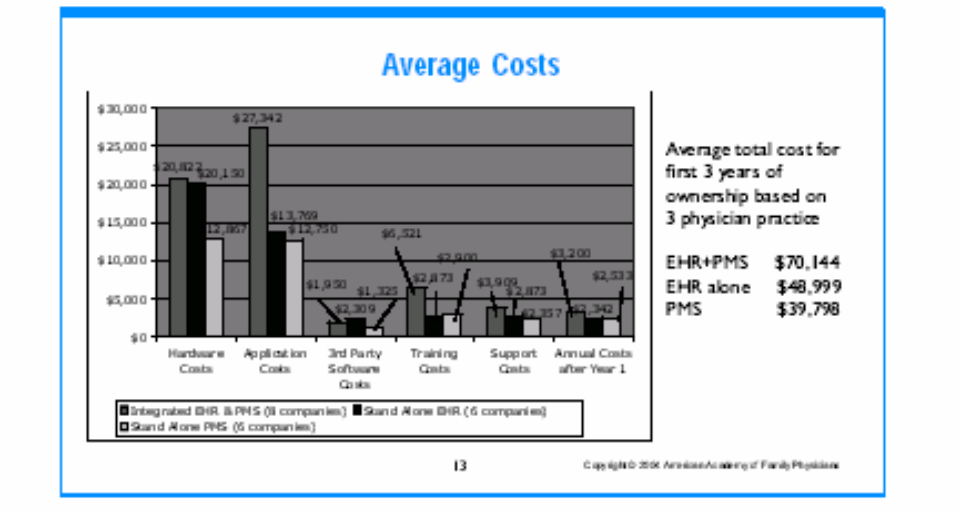
Clinical

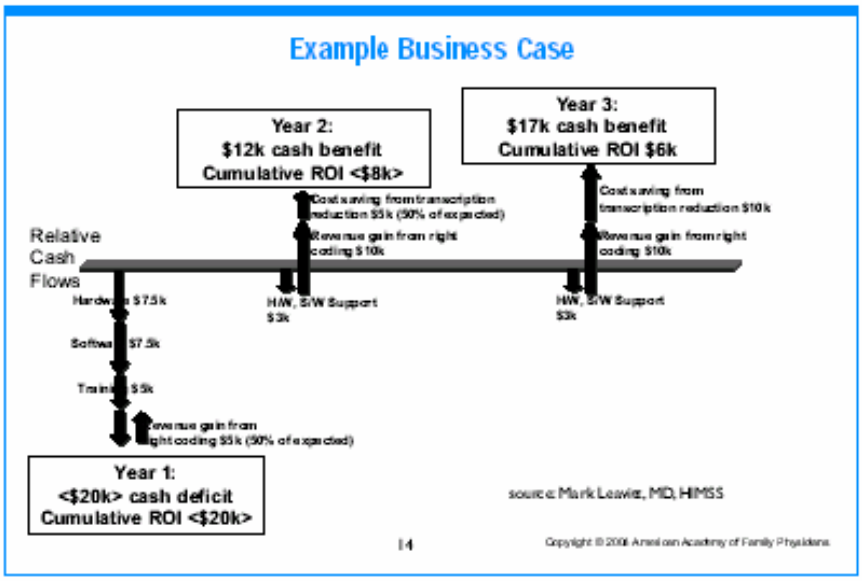
- ***Service delivery advances*** from better adherence to clinical protocols and improvements in the stages of clinical decision-making (i.e., initiation, diagnostics, monitoring and tracking, and acting).
- ***Clinical outcome improvements*** represented as reductions in medical errors, decreases in morbidity and mortality, and expedited recovery times.

Organizational

- ***Stakeholder satisfaction improvements*** resulting from decreased wait times, improved access to health care information, and more positive perceptions of care quality and clinician efficacy.
- ***Risk mitigation*** resulting from decreases in malpractice litigation and increased adherence to federal, state, and accreditation organization standards.

The AAFP Center for Health Information Technology survey[26] found that, in 2004, the average total cost for the first three years of ownership in a three-physician practice is just $70,000 for an integrated EHR/PMS (practice management system). The same cost for an EHR alone would be just under $49,000, while cost for a PMS alone would be just under $40,000. Analysis of cash flow suggests that much of the initial investment in hardware, software, and training would be recouped by year two due to cost savings from reduced transcriptions and revenue gains from more appropriate coding. By year three, the cumulative ROI would be positive.




Example Business Case
Year 2:
$12k cash benefit
Cumulative ROI <$8k>
Year 3:
$17k cash benefit
Cumulative ROI $6k
Cost saving from transcription reduction $5k (50% of expected)
Revenue gain from right coding $10k
Cost saving from transcription reduction $10k
Revenue gain from right coding $10k
Relative Cash Flows
HW, S/W Support $3k
HW, S/W Support $3k
Revenue gain from right coding $5k (50% of expected)
Year 1:
<$20k> cash deficit
Cumulative ROI <$20k>
source: Mark Leavitt, MD, HIMSS
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Financial Analysis Methods

A federal government study[27] of the potential costs of a national health information network utilizes a model developed by Wang and colleagues;[28] seefigures in the table below. The model does not include costs for ongoing maintenance, arguing that, though annual support and upgrades for physician EMR programs are often 20% of software costs, these are much small figures than are often paid as normal operating costs on a monthly basis. Additionally, this model maintains that total operating costs are generally lower one to three years after implementation, so these annual software costs are more than offset by lower staffing, real estate, transcription and other pre-EMR adoption operating costs. As well, the model cites hospital reports of a 55% reduction in medical records personnel costs by year five, which would also offset software and other IT expenses. Thus, real and ongoing costs are not, in this model, considered a significant incremental burden but rather replacing a previous, larger one, and thus are not included in the model.

In support of this approach, other research seems to suggest that the negative impact of EHR implementation on productivity is modest and may diminish over time. However, this assumption does point to the need to design applications that are intuitive to even new users and adaptable to the different workflow patterns in small practices.[23]

Cost of EMRs per provider in 2002 US dollars	**Wang, et al, 2003[28]**		
		Sensitivity Analysis	
	Base Case	Lower Bound	Upper Bound
System Costs			
Software (annual license)	$ 1,600	$ 800	$ 3,200
Implementation	$ 3,400	$ 3,400	$ 3,400
Support & Maintenance	$ 1,500	$ 750	$ 3,000
Hardware (3 computers + network)	$ 6,600	$ 3,300	$ 9,900
Induced Costs			
Temporary productivity loss	$ 11,200	$ 5,500	$ 16,500
TOTAL	**$ 24,300**	**$ 13,750**	**$ 36,000**

Summary of Financial Estimates

Applying Wang model to Wisconsin

Costs: **Dollars (in 1,000s)**

Category	Per entity lower bound	Per entity upper bound	Total # of entities	Total Costs - lower bound	Total Costs - upper bound
Statewide/Central Coord	$ 3,000	$ 5,000	1	3,000	5,000
RHIOs	$ 10,000	$ 113,000	4	$ 40,000	452,000
MD office EMRs	$ 14	$ 50	14,000	$ 196,000	$ 700,000
Hospital EMRS	$ 10,000	$ 40,000	145	$ 1,450,000	$ 5,800,000
Total				**$ 1,686,000**	**$ 6,952,000**
model:	*Hopper, Ames, 4/2004*				

		Adoption Gap: Sensitivity Test			
	Per entity lower bound	Per entity upper bound	Total # of entities	Total Gap Costs lower bound	Total Gap Costs upper bound
80% gap					
phys office	$ 14	$ 50	14,000	$ 156,800	$ 560,000
hospital	$ 10,000	$ 40,000	145	$ 1,160,000	$ 4,640,000
total				$ 1,316,800	$ 5,200,000
65% gap					
phys office	$ 14	$ 50	14,000	$ 127,400	$ 455,000
hospital	$ 10,000	$ 40,000	145	$ 942,500	$ 3,770,000
total				$ 1,069,900	$ 4,225,000
50% gap					
phys office	$ 14	$ 50	14,000	$ 98,000	$ 350,000
hospital	$ 10,000	$ 40,000	145	$ 725,000	$ 2,900,000
total				$ 823,000	$ 3,250,000
35% gap					
phys office	$ 14	$ 50	14,000	$ 68,600	$ 245,000
hospital	$ 10,000	$ 40,000	145	$ 507,500	$ 2,030,000
total				$ 576,100	$ 2,275,000
20% gap					
phys office	$ 14	$ 50	14,000	$ 39,200	$ 140,000
hospital	$ 10,000	$ 40,000	145	$ 290,000	$ 1,160,000
total				$ 329,200	$ 1,300,000
10% gap					
phys office	$ 14	$ 50	14,000	$ 19,600	$ 70,000
hospital	$ 10,000	$ 40,000	145	$ 145,000	$ 580,000
total				$ 164,600	$ 650,000

HIT Adoption:
To achieve 100% EHR, starting with an assumed 35% adoption gap by Wisconsin physicians and hospitals, resources will be required as follows:

- $576 million to 2.3 billion in start-up capital
- $18 million to 27 million per year for maintenance

Note: The figures here provide only general estimates based on several assumptions and placeholder figures. These are intended only to portray the range of magnitude of resources that will go into building the HIT and operating the system. As well, these figures reflect that resources the will be required from all sources, public and private, and do not indicate how much public sector funding must be directed toward this initiative.

Again, it is important to note that more refined Wisconsin-specific financial projections depend on estimates of the current level of HIT adoption among Wisconsin's physicians and hospitals. Beyond this, statewide interoperability will require resources to both fill the adoption gap and to adapt current and legacy systems.

Financing Strategy: Recommendations

Goal:
Develop options for funding electronic health records in all sizes of health care settings and for the operation of a statewide public-private health information infrastructure.

Strategy: The best strategy for overcoming the barrier to HIT adoption is to increase the value proposition of EHRs.

Findings and Premises underlying Recommendations:

1. HIT/HIE is a public good and the investment in its development and operations should be partially funded from public sources.
2. Financing is needed for three levels of infrastructure: 1) appropriate HIT adoption and use by providers, 2) HIE through RHIOs or other exchange mechanisms at the regional level, and 3) statewide HIE.
3. A fully implemented HIE environment requires consistency of platforms and standards for inter-operability that do not yet exist, and must be developed at the national level.
4. The approach must be statewide, politically feasible, and consistent with federal initiatives.
5. The RHIO concept does not capture a standard set of information exchange activities or functions, and thus the acronym does not describe any specific model. Financing will need to target individual functions and step-wise, phased-in modular adoption of functions. The definition of the scope and functions of a state-level RHIO effort will determine the strategies for obtaining long-term sustainable financing.
6. Regional HIE can reduce the costs of system start-up as well as maintenance, through shared services and economies of scale. Some potential activities might include:
    - Planning and technical assistance for HIT implementation
    - Standardizing data and data-handling applications
    - Reducing the number of interfaces needed to import or export data
    - Minimizing hardware, network, and lifecycle management costs through Internet-served applications
    - Volume-discount purchasing

- Reducing redundant information systems by routing most exchange and reporting through a regional HIE

7. Up-front subsidies will not support ongoing HIT use and investment. Ideally public and private reimbursement systems should be aligned to produce long-term return-on-investment (ROI), fostering long-term use and continued investment in HIT and HIE, while preserving market price pressures on vendors. Nevertheless, assistance with short-term capitalization of HIT may be needed for low-margin safety-net providers.
8. The plan will require phase-in over time, but HIE promotion should not crowd out resources to bring all providers to a baseline level of capability for internal clinical and patient safety systems and the internal capture and aggregation of data. As well, incentives must not crowd out private sector market developments and within-enterprise investment priorities.
9. Any State incentives for adoption must recognize and reward the investments already made by early adopters/investors/pioneers while promoting broader diffusion of technology.
10. Marginal costs must correspond with marginal benefits. This will vary by type of provider/constituent, but each stakeholder needs to realize a proportional ROI. The financial contributions to fund the initiative should be equitable among the key health care stakeholders (public/private as well as provider, payer and purchaser) and proportionate to the use/benefit.
11. The system requires re-engineering processes and workflow, and adoption phase-in will incur productivity costs.
12. HIE must accommodate existing efforts and incorporate legacy systems. New systems must avoid creating multiple login environments where HIT exists but interface capability is currently lacking. At the same time, existing initiatives will need to evolve to meet the promise of emerging technology.
13. Organizations - particularly low-volume unaffiliated – may need help financing and implementing EHR systems. Many rural hospitals in particular lack interface engines and interface expertise, and often have limited IT resources in house. They will need interfacing hardware, software, and expertise resources to participate in HIE.
14. Costs of participation in HIE need to be scaled for smaller rural communities, with consideration of the relative benefits in various markets.
15. HIE will allow for flexible flow of clinical data across systems and referral centers, rather than limiting access within existing referral relationships and proprietary networks.
16. The actual RHIOs will develop business plans and a clear value model for each HIE function they pursue, with specific capital and operating expenses and potential revenue sources identified.

Role of Public and Private Sectors:
Most of the funds for HIT acquisition, start-up, and maintenance will continue to come through private investment, particularly as HIT becomes the part of standard medical practice and the baseline cost of doing business. As the market moves naturally in that direction, the prices for HIT should moderate. However, timely universal adoption and participation in HIT/HIE – including providers and facilities of all sizes and throughout the state – will require public and private sector seed money and incentives. As well, the success of this enterprise for all providers and their patients will require a continued redesign of payment systems to support value, quality, and outcomes.

- State government should use its leverage as a purchaser and payer to drive HIT adoption.
- State government programs, including Medicaid, ETF, biosurveillance, and public health services, should tie in with the state-level HIE architecture rather than create stand-alone, parallel (silo) data systems. Integration of such programs into state and regional HIE can minimize redundancies and disruptions to clinical workflow. Savings and benefits should be

returned to participants in the form of economic or other incentives for providers to adopt and participate in the system.

- The *eHealth Action Plan* should leverage Wisconsin's strength and talent in the HIT industry to develop non-proprietary/open source EHR products, to improve the value of what is delivered, and to assist with customizing or adapting it for application.
- The *eHealth Action Plan* should pursue EHR group purchasing strategies, as well as possible contributions from payers that are potential beneficiaries of providers' use of HIT.
- Private industry, health care organizations and purchasers all have a key role in HIE development. Purchasers and payer organizations should develop and implement value-based purchasing strategies, including pay-for-quality programs that encourage HIT adoption and use. Such strategies must coalesce around common quality, value, safety and data standards. Savings in one sector may need to be shared with others to overcome early mismatches between the costs and benefits of those joining the exchange.

With these premises, the Financing Workgroup identified existing and potential funding sources to support development of the ehealth infrastructure. The following list includes proposed financing strategies for funding both start-up and operations, including the appropriate roles of the public and private sectors.

Forms of Revenue for RHIOs and HIT/HIE:

Contributed income:

Federal grants (AHRQ, NHIN, CMS)
State grants - DHFS
Wisconsin Telecommunications Fund
Foundations

Tax credits and exemptions

Potential lenders: Bond issue, in combination with other credit enhancements and low-interest loans

Potential earned income:

- Stakeholder contributions
- Membership fees – based on size and/or usage
- Programs or service fee: for example, for participation in group purchasing arrangements, educational services
- P4P of other forms of reimbursement financing, particularly through state payers – Medicaid, ETF
- Subscription/use/per-claim transaction fee – based on benefit to participants
  - $ per clinical result delivered
  - $ per covered life per month
  - $ per hour for technical assistance
  - $ per month for a license to use a particular software package over the Web

Note on prepayment of subscription of use fees: The Financing Workgroup did specifically consider Dr. William Yasnoff's eHealth Trust model, which models a $5 per month patient dues structure and patients' control of deposits and withdrawals into a health data bank account. The Financing Workgroup found potential elements of this model that merit further exploration, particularly for use by local RHIOs. However, considering the centralized data enterprises already underway in Wisconsin (such as WHIO and WCHQ) the Financing Workgroup did not consider the eHealth Trust approach relevant for "off the shelf" adoption within Wisconsin's current environment and circumstances.

Recommendations on Specific Funding Sources:

The Wisconsin Department of Health and Family Services has begun taking steps in the direction recommended in this report. In October 2006 DHFS submitted a Medicaid Transformation Grant proposal to federal CMS that includes three provisions consistent with the state eHealth financing strategy: 1) operational and technical assistance to advance the adoption of EHRs by safety net providers; 2) HIE focused on the Medicaid and General Assistance Medical Program (GAMP) populations in Milwaukee County, and 3) pay-for-quality incentives to encourage standard data collection and quality reporting.

Beyond this potential source of federal support, the eHealth Financing Workgroup recommends that the Governor and legislature consider the following measures to support the goals of Wisconsin's *eHealth Action Plan*.

Revenue Bond:

- State Legislature should authorize a call for officially designated RHIOs or like structures;
- RHIO would be eligible for financing HIE through state bonding authority;
- State would pay its proportionate share (ETF, Medicaid) if other sectors participate;
- Bond issue would be paid by users' revenue, not repaid by state GPR (general purpose revenue);
- State should pursue the feasibility of a tax-exempt lease as a preferred financing approach.

Tax Credits and Exemptions:

The U.S. Department of Health and Human Services recently issued new regulations that relax the restrictions (known as Stark and anti-kickback rules) on donations of e-prescribing software and hardware to physicians. The regulations include the following provisions:

- Provide for safe harbor protection for donations of EMR or electronic prescribing hardware, software or training.
- Expand the types of donors and recipients eligible for the safe harbor regulations.
- Require that software must be interoperable or certified by an organization recognized by the Secretary, likely to be CCHIT.
- Mandate that recipients must pay at least 15% of the cost of the donated technology or service.
- Define sunset for relaxation of rules to be December 31, 2013.

The Wisconsin legislature and Governor should consider adoption tax exemptions on donated IT systems consistent with these changes and with related federal tax exemptions.

In addition, Wisconsin's and other states' legislatures have considered creating an income and franchise tax credit for health care providers in an amount that is equal to or some proportion of the amount that the health care provider pays in the taxable year for information technology hardware or software that is used to maintain medical records in electronic form. As well, Wisconsin might create an individual and corporate income tax exemption for interest on bonds or notes issued by the Wisconsin Health and Educational Facilities Authority for purposes related to the purchase of information technology equipment by health facilities.

Medicaid and ETF Incentive Payments

Several states around the country provide examples of the kind of leverage the State of Wisconsin might exert in its role as a major purchaser of health care services. For example, the legislature in Wisconsin, as well as in other states, have considered directing state Medicaid agencies to make an annual incentive payment to hospitals that establish and maintain a physician order entry record systems.

Shared Services: Wisconsin's eHealth Initiative, as a public-private collaboration, could coordinate/integrate key and necessary administrative and other activities that maximize efficiencies and reduce total cost/resource allocation across various initiatives. Among potential immediate opportunities for collaboration:

- Legal---data share and business associate agreement templates
- Insurance-umbrella policy for liability
- IT-data elements and architecture; HIPAA regulations
- Accounting
- Vendor RFP processes, evaluation, and acquisition

Blue Cross/Blue Shield Endowment: Wisconsin's two medical schools, the University of Wisconsin - Madison and the Medical College of Wisconsin, are the stewards of the endowment funds that resulted from Wisconsin BC/BS conversion to a private shareholder corporation. These funds are guided by a five-year plan, and the funds have developed a significant reserve. The next five-year plan is being developed and is scheduled to take effect in 2009.

- The eHealth Financing Workgroup recommends that the two medical schools carefully study Wisconsin's *eHealth Action Plan* and consider strategic and programmatic investment opportunities, recognizing the shared goals and mission between the two enterprises.

Recommendations for Targeted Financing:

The published literature demonstrates a significant the adoption gap based on size of practice. Wisconsin has a natural advantage in its progress along the adoption curve, owing to the concentration of medical practice in several large multi-specialty clinics. The challenge, rather than low EHR adoption, resides with variable EHR adoption.

The Financing Workgroup calls for special attention to the formidable challenge of converting small (fewer than five) physician practices to EHR. Small practices lack the resources (financial and staff) of their larger counterparts, and they face unique risks in moving into HIT. This is especially true so for small rural practices, which lack the economies of scale necessary to handle the investments required.

To their benefit, these smaller practices are often not as complex and are more likely focused on primary care rather than specialties. This can make interoperability easy to attain. They may find it easier to align behind a "clinical champion" for multi-small-group HIT-enabling enterprises. At the same time, however, many rural hospitals also face significant technical and financial barriers to fully implement EHRs, and connect to larger referral and transfer facilities.

Small and rural providers need more time and more dedicated IT assistance to close the gap within the five-to-ten year window. They need time and assistance in exploring the extra step of things like "community network purchasing." They urgently need to collaborate among themselves, but also to have a technology partner committed to serving their conversion needs. This might include a statewide competitively-bid contract and special financial support to fill their unique financing gap.

- ***Focus on smaller, rural, and safety net providers:*** Direct resources to those stakeholders who must be engaged but who may lack the resources to contribute financially (safety net providers, Federally Qualified Health Centers (FQHCs), Rural Health Centers (RHCs), Critical Access Hospitals (CAHs), local health departments).
- ***Action Plan Function Phase-In:*** Treat solo and small-practice physician offices as a special case; pursue their conversion on a "special track" and special adaptation timeline basis.
- ***Demonstration Project Funds:*** Provide funds for demonstration projects that model collaboration in HIT purchasing, support and information exchange.
- ***Focus on Early Wins:*** Target investments first at functions that promise early wins, such as e-prescribing and disease registries.

Summary of Specific Financial Provisions In Legislation Introduced and Enacted, by State

Note: Items in italics have been enacted and are existing law.

	Tax Credits/ Deductions	Loan Funds	Targeted Support	General Fund HIT/HIE support
California		Low interest loan program		
Connecticut				$200,000 for e-prescribing
Florida				$9.4M general revenue FY07
Hawaii	Exempts up to $20K per year from excise tax for qualifying IT	*$30M special purpose revenue bonds*	$3M state funds for 25% of IT costs up to $500K to each FQHC	
Maryland	Tax credit of 50% of price of software for e-prescribing, not to exceed $1000.			
Massachusetts		Zero or low interest loans through Mass Health and Educational Facilities Authority	$38M from general fund for ECP Trust Fund $1.5 M for CHCs $10M from tobacco Settlement for grants, contracts, loans, and equity investments	*$5M for CPOE* $210M (from surcharge on insurance premiums) for "Hospital Patient Safety Technology Trust Fund" grant program
Michigan				*$30.5M ($18.6M FED, $3M RES, $8.9M GPR)*
Minnesota		Loan program, with total accumulative principle not to exceed $65K per loan and repaid within 15 years.	Grant program to assist rural hospitals. Governor proposed $12M in matching grants. *Legislature funded $1.5M for 2006.*	
Missouri				Healthcare Technology Fund
New Mexico			$2.4M for primary care clinics	
New York				*Health Information Technology Demonstration Program*
Pennsylvania				Grants of $1 million /

				provider, with 100% match required, available from "Medical Safety Automation Fund"
Rhode Island		*Loans for period not to exceed 25 years at annual interest rate <5%*		*$20 million for HIE*
Utah				*$500,000 for FY07 for Utah Telehealth Network*
Vermont			*Loan and grant program to provide for capitalization of EMR systems and primary care practices*	*$700,000, $500,000 of which is $ for $ matching funds for pilot programs and to contract for develop of HIT plan*
Virginia				*$1.55 million for statewide HIT/HIE and $1.3 million for grants to providers*
Washington	Tax credit of 50% of amount expended for HIT, subject to a lifetime maximum of $10K for each eligible person			
West Virginia	Tax credit of amount equal to the investment in EMRs			
Wisconsin	Tax credit equal to 50% of amount paid in taxable year for IT, with maximum amount in taxable year $10M.	Income tax exemption for interest on bonds or notes issue by the WHEFA for purpose of HIT purchase.	Incentive payments to hospitals to establish CPOE, equal to 1% of Medicaid reimbursement to hospitals for previous FY.	*2005 Wisconsin Act 228 provides matching funds for operation of Wisconsin Health Information Organization(WHIO), including $150,000 from ETF and DHFS contributions for provider fees.*
Wyoming				$21.1 million for state RHIO; $37 million for financial assistance to hospitals; $240,000 additional funds for HIT/HIT

ENDNOTES

[1] Avaleer Health, LLC. *Evolution of State Health Information Exchanges, A Study of Vision, Strategy and Progress.* Agency for Healthcare Research and Quality (AHRQ) January 2006 Report. http://healthit.ahrq.gov/portal/server.pt/gateway/PTARGS_0_130379_0_0_18/AHRQ%20HIE%20State%20Based%20Final%20Report.pdf

[2] *Health Affairs*, September/October 2005, Health Information Technology Issue. http://content.healthaffairs.org/content/vol24/issue5/

[3] Fonkych K, Taylor R. *The State and Pattern of Health Information Technology Adoption*. RAND Corporation, MG-409-HLTH,2005; http://www.rand.org/pubs/research_briefs/RB9136/RAND_RB9136.pdf

[4] Girosi F, Meili R, Scoville R, *Extrapolating Evidence of Health Information Technology Savings and Costs*. RAND Corporation, MG-410-HLTH, 2005. http://www.rand.org/pubs/monographs/2005/RAND_MG410.sum.pdf

[5] Goodman C. Savings in EMR Systems? Do It for the Quality. *Health Affairs* 24(5): 1124-1126, September/October 2005.

[6] Shekelle PT, Morton SC, Keele EB. *Costs and Benefits of Health Information Technology*, Evidence Report/Technology Assessment Number 132. (Prepared by the Southern California Evidence-based Practice Center under Contract No. 290-02-0003.) AHRQ Publication No. 06-E006. Rockville, MD: Agency for Healthcare Research and Quality. April 2006. http://www.ahrq.gov/downloads/pub/evidence/pdf/hitsyscosts/hitsys.pdf

[7] Healthcare Information Management and Systems Society. *2006 HIMSS Leadership Survey, February 13, 2006. CIO Results. Trends in Healthcare Information Technology*. http://www.himss.org/2006survey/

[8] Markle Foundation. June 2004. Achieving Electronic Connectivity in Health Care, A Preliminary Roadmap from the Nationa's Public and Private-Sector Healthcare Leaders. Funding and Incentives, pp. 44-50. http://health.internet2.edu/files/cfh_roadmap_final_0714.pdf

[9] MedPac. *Report to Congress: New Approaches in Medicare*, Chapter 7, Information technology in health care. June 2004. http://www.medpac.gov/publications%5Ccongressional_reports%5CJune04_ch7.pdf

[10] National Health Leadership Council. *Health Information Technology: A Foundation for Health System Reform*. National Busienss Coalition on Heatlh. April , 2005.

[11] Jensen CM. *Funding RHIO Startup and Financing for Life. The Survey of Regional Health Information Organizations, Finance Findings*, June 2006. Healthcare IT Transition Group. http://www.hittransition.com/RHIO_Survey_2006.

[12] American Health Information Management Association (AHIMA). *Development of State Level RHIOs Consensus Conference Workbook.* July 18-19, 2006.

[13] Hillestad, R, Bigelow J, Bower A, et al. Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, and Costs. *Health Affairs* Sept/October 2005 Vol. 24(5):1103-1117.
Full report: rRAND Corporation. Health Information Technology, Can HIT lower Costs and Improve Health? Research Highlights RB-9136-HLTH(2005).
http://ww.rand.org/pubs/research_briefs/RB9136/RAND_RB9136.pdf

[14] Walker J, et al. The Value of Health Care Information Exchange and Interoperability. *Health Affairs*, January 13, 2005 http://content.healthaffairs.org/cgi/content/full/hlthaff.w5.10/DC1

[15] Sidirov J. It Ain't Necessarily So: The Electronic Health Record and The Unlikely Prospect of Reducing Health Care Costs. *Health Affairs* July/August 2006. Vol 25(4):1079-1085.

[16] Miller RH, West C, Martin Brow T, Sim I, Ganchoff C. The Value of EHR in Solo or Small Group Practices. *Health Affairs* 24(5): 1127-1137, September/October 2005.

[17] Poissant, 2005
[18] Garrido, 2005

[19] *Moving Toward Electronic Health Information Exchange: Interim Report on the Santa Barbara County Data Exchange*, July 2003. (Financial Analysis pages 24-30)
http://www.chcf.org/documents/ihealth/SBCCDEInterimReport.pdf

[20] Gans D, Kralewski J, Hammons T, Dowd B. "Medical groups' adoption of electronic health records and information systems," *Health Affairs* 24(5):1323-1333, September/October 2005. *For study details, see Medical groups' adoption of electronic health records and information systems:*
http://www.healthmgttech.com/news_letters/images/MGMA_graphs_final[1].pdf

[21] Fonkych K, Taylor R. *The State and Pattern of Health Information Technology Adoption*. RAND Corporation, MG-409-HLTH,2005;
http://www.rand.org/pubs/research_briefs/RB9136/RAND_RB9136.pdf

[22] Burt CW, Sisk J. Which Physicians and Practices are Using EMR? *Health Affairs* 24(5): 1334-1342, September/October 2005.

[23] Poon EG, Jha KA, Christino M, et al. Assessing the level of healthcare information technology adoption in the United States: a snapshot. BMC Medical Informatics and Decision Making 2006, 6:1.

[24] eHealth Initiative. Connecting Communities Toolkit. Value Creation and Financing. 2006.
http://toolkit.ehealthinitiative.org/value_creation_and_financing/Default.mspx

[25] Johnston D, Pan E. 2002. *Finding the Value in Healthcare Information Technologies*. Boston: Center for IT Leadership, Partners HealthCare. http://www.citl.org/findingTheValue.pdf

[26] Kibbe D. Critical Issues in HIT Adoption. Section III in *Health Information Technology: A Foundation for Health System Reform*. National Business Coalition on Health, 2005.

[27] Hopper K, Ames KJ. Standardized EMRs. Agency for Healthcare Research and Quality. April 2004.

[28] Wang, et. al., A Cost-Benefit Analysis of EMRs, *The American Journal of Medicine*, Vol. 114, April 1, 2003.

[29] Kaushal R, Blumenthal D, Poon E, et al. The Costs of a National Health Information Network. *Annals of Internal Medicine* Vol 143(3):165-173.

[30] Source: Jha A, Ferris TG, et al. How Common are Electronic Health Records in the United States? A Summary of The Evidence. *Health Affairs* Web Exclusive, October 11, 2006: w496-w507.

[31]Willley VJ, Daniel GW. *An Economic Evaluation of Use of a Payer-Based Electronic health Record within an Emergency Department*. Wilmington, DE: HealthCore, Inc. July 24, 2006.

Additional References and Resources

1. Fonkych K, Taylor R. *The State and Pattern of Health Information Technology Adoption*. RAND Corporation, MG-409-HLTH,2005; http://www.rand.org/pubs/research_briefs/RB9136/RAND_RB9136.pdf

2. Girosi F, Meili R, Scoville R, *Extrapolating Evidence of Health Information Technology Savings and Costs*. RAND Corporation, MG-410-HLTH, 2005. http://www.rand.org/pubs/monographs/2005/RAND_MG410.sum.pdf

3. RAND Corporation. Health Information Technology, Can HIT lower Costs and Improve Health? Research Highlights RB-9136-HLTH(2005). http://ww.rand.org/pubs/research_briefs/RB9136/RAND_RB9136.pdf

4. Healthcare Information Management and Systems Society. *2006 HIMSS Leadership Survey, February 13, 2006. CIO Results. Trends in Healthcare Information Technology*. http://www.himss.org/2006survey/

5. Center for Information Technology Leadership. *HIEI: Healthcare Information Exchange and Interoperability*. http://www.citl.org/research/HIEI.htm

6. Walker, J. *Taking a Hard Look at Potential Costs and Benefits Of Electronic Data Exchange.* Center for IT Leadership, April 2006. http://www.coloradohealthinstitute.org/documents/corhio/walker.pdf

7. Markle Foundation. June 2004. Achieving Electronic Connectivity in Health Care, A Preliminary Roadmap from the Nation's Public and Private-Sector Healthcare Leaders. Funding and Incentives, pp. 44-50. http://health.internet2.edu/files/cfh_roadmap_final_0714.pdf

8. MedPac. *Report to Congress: New Approaches in Medicare*, Chapter 7, Information technology in health care. June 2004. http://www.medpac.gov/publications%5Ccongressional_reports%5CJune04_ch7.pdf

9. *Arizona Health-e Connection Roadmap*. April 4, 2006. http://gita.state.az.us/tech_news/2006/Arizona%20Health-e%20Connection%20Roadmap.pdf

10. Minnesota eHealth Initiative. *Report of the Finance Workgroup*. June 23, 2005. www.health.state.mn.us/e-health

11. Health Policy Institute of Ohio. *Assessing Health Information Technology in Ohio*. Briefing Paper for the 2005 Ohio Health Information Symposium. Columbus, OH: October 2005. http://www.healthpolicyohio.org/pdf/OhioHealthInfo2005.pdf

12. The Dartmouth Atlas of Health Care, Geographic Query Finder. http://www.dartmouthatlas.org/data/finder.shtm

13. *Florida Health Information Network, Architechtural Considerations for Infrastructure*. Draft White Paper prepared for the Governor's Heatlh Ifnoramtion Infrastructure Advisory Board. May 1, 2006. http://www.fdhc.state.fl.us/dhit/pdf/FHIN_White_Paper_Ver_5.2.pdf

14. Utah Health Information Network Fee Schedule: http://www.uhin.com/start/UHINet%20Attachment%20A.pdf
About Utah Health Information Network: http://www.uhin.com/about/1page%20UHIN%20Summary%20January%202004.pdf

15. Center for Information Technology Leadership: http://www.citl.org/research/HIEI.htm http://www.citl.org/research/ACPOE.htm

16. Minnesota eHealth Finance Committee report: http://www.health.state.mn.us/e-health/summit/financereport.pdf
appendix: investment analysis: http://www.health.state.mn.us/e-health/summit/framework.pdf

17. Shaw G. Group purchasing puts EHRs in small offices. *American College of Physicians ACP Observer*, March 2006. http://www.acponline.org/journals/news/march06/ehrs.htm

18. *Moving Toward Electronic Health Information Exchange: Interim Report on the Santa Barbara County Data Exchange*, July 2003. (Financial Analysis pages 24-30) http://www.chcf.org/documents/ihealth/SBCCDEInterimReport.pdf

19. PricewaterhouseCoopers. *Measuring the Costs and Benefits of Health Care Information Technology: Six Case Studies.* California HealthCare Foundation, Sept. 2004. http://www.chcf.org/topics/view.cfm?itemID=105676