

## P E R S P E C T I V E

## Retrospective: Lessons Learned From The Santa Barbara Project And Their Implications For Health Information Exchange

Through a series of small steps, the larger goals of health information exchange can be realized.

by **Jonah Frohlich, Sam Karp, Mark D. Smith, and Walter Sujansky**

**ABSTRACT:** Despite its closure in December 2006, the Santa Barbara County Care Data Exchange helped focus national attention on the value of health information exchange (HIE). This in turn led to the federal government's plan to establish regional health information organizations (RHIOs). During its existence, the project pioneered innovative approaches, including certification of health information technology vendors, a community-wide governance model, and deployment of a peer-to-peer technical model now in wider use. RHIO efforts will benefit from the project's lessons about the need for an incremental development approach, rigorous implementation processes, early attention to privacy and liability concerns, and planning for a sustainable business model. [*Health Affairs* 26, no. 5 (2007): w589–w591 (published online 1 August 2007; 10.1377/hlthaff.26.5.w589)]

**I**N 1998, IN RESPONSE TO a request from the Santa Barbara County health care community about how it might improve the quality and safety of care to its patients, the California HealthCare Foundation (CHCF) spent more than a year assessing the opportunity to develop a communitywide approach to health information exchange (HIE). The resulting objectives of the Santa Barbara Project were to create a simple and secure way to electronically share patient data across organizations; a public utility available to all physicians, caregivers, and consumers; an experiment to determine whether a community would share the cost of a regional information technology (IT) infrastructure; and a model for other communities

in California and across the United States.<sup>1</sup>

The five-year, \$10 million investment in late 1999 was the largest single grant made by the CHCF and, admittedly, one of its riskiest investments. Eight years after that investment decision, it is important to understand what actually happened.<sup>2</sup>

■ **Bold vision; poor execution.** The vision for the Santa Barbara Project was bold: Connect all health care institutions across Santa Barbara County and create a secure mechanism for appropriately sharing clinical and administrative information. Lessons from the failed Community Health Information Networks (CHINs) a decade before helped to inform and guide the effort. A unique “Napster-like” peer-to-peer data model was envisioned

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to greatly lower the cost of operation, improve security, and address data ownership concerns. Also, a comprehensive framework was designed to address the legal, organizational, and governance requirements of the endeavor.

Efforts to adequately plan for and execute the technology were not as successful. Initially, the vendor erred in its assessment that the technology needed to implement the Care Data Exchange (CDE) already existed in the market. Second, the vendor's subsequent development and implementation of its own technology was slow and did not adequately define users' functional requirements, which necessitated redesign and redevelopment of important functionality. Last, poor documentation and insufficient testing of the data interfaces meant that many of them had to be reworked, introducing further delays. In all, a development project scheduled to take three years took six; unfortunately, the boldness of the vision was not matched by a focused and efficient software development effort.

■ **“All-at-once” design approach flawed.**

It is important to remember the context in which the system was being developed to understand the decision to build and deploy the CDE's functionality “all at once.” The CDE was launched in the froth of the dot-com boom. The visionaries leading these new technology companies were encouraged to build big, build fast, and push the envelope of existing technological capabilities. The decision was made to build a comprehensive health information exchange (HIE) all at once to address most participants' needs for access to a broad range of clinical and administrative data and to demonstrate a comprehensive solution.

In 1999, most existing clinical data—even electronic data—were not standardized and thus could not easily be combined with similar data from other sources; this is still the case. Also, “legacy” systems that dominated the market then, as now, were built to easily enter and display data, not to share them with other systems. This reality made the task of simultaneously building interfaces to all of the community's individual information systems complex.

■ **Value not realized; community fa-**

**tigue.** From the outset, the financing approach was designed to use foundation funds to support the development and piloting of the system, in the belief that the community would be unwilling to invest in an unproven system. This has been the case in most RHIOs under development in which foundation or government funds have seeded the effort. Planners believed that once the community realized the point-of-care benefits derived from easier and faster access to comprehensive clinical information, the investment of local funds would be forthcoming. Stakeholder buy-in, they argued, is achieved through demonstrated value, not a theoretical construct. However, the repeated delays inherent in attempting to deliver the entire project all at once, including data integrity issues, requirements to filter sensitive data, and provider concerns about liability for security or confidentiality breaches beyond their direct control, created what might be characterized as “communitywide fatigue.”

Even though most of these problems were resolved by the time the system was finally ready for use, alternative methods for exchanging data had been partially established by then through local hospital portals and direct laboratory feeds to providers. The project ultimately collapsed under the weight of the repeated delays and its overly ambitious scope.

## Lessons Learned

■ **Radical incrementalism.** An alternative approach to all-at-once design is what some call “radical incrementalism,” usually typified by rapid “waves” of near-term (six- to twelve-month) initiatives, organized around a clearly articulated longer-term (five- to ten-year) strategic direction. The basic concept is that the best way to drive major change is through a series of smaller, successful waves. Each success represents a small step in the right direction. The overall cumulative effect can create radical change.

Had the Santa Barbara Project deployed this methodology—starting, for example, with the exchange of lab results data—it would have met an immediate need most providers

expressed. Lessons regarding technology challenges, user requirements, and liability concerns could have been learned earlier and applied to the sharing of other information, such as pharmacy or radiology data. Input from users could have been gathered and assessed to allow for refinement of the system's user interface. Immediate value would have been created and reliably quantified to establish momentum for the project.

■ **Distributed peer-to-peer model viable.** The project demonstrated the viability of a managed peer-to-peer model for HIE. The CDE architecture enabled data from each source to be stored in separate databases that could be managed independently and locally by each participating organization. As long as new data were properly registered with the central information directory, organizations could retain full control over their data and easily remove them from the service if they no longer wished to participate. This local, distributed management of data was a novel concept in HIE. The distributed nature of the data was all but transparent to users, and it helped address many data-ownership issues.

■ **Address privacy and liability issues early.** Privacy and liability issues need to be addressed up front. RHIOs should start with local policies as a base (for example, those established by the local hospital), understand federal and state regulations, and engage relevant stakeholders, including consumers, from the onset. Involving consumers in the process of developing these policies will have another valuable consequence: both input and buy-in from a powerful customer base. RHIOs have the potential to be a mechanism through which consumers can access and control their health history. The fact that 92 percent of consumers are willing to share personal health information with other health professionals involved in their care who are not their primary care provider shows that there is a strong desire among consumers for exchange of information that improves their care.<sup>3</sup> There is also a need for further safe-harbor provisions to foster HIE, while protecting providers who meet certain privacy safeguards from in-

creased liability exposure.

■ **Value of standards.** The project underscored the need for more widely adopted data-exchange standards. Much of the time and resources needed to build the CDE were devoted to understanding and integrating the various sources of clinical data. The absence of widely supported standards, therefore, adds greatly to the complexity and cost of regional HIEs, in both initial implementation and ongoing maintenance. A better mechanism is needed to encourage or force the faster development, adoption, and use of exchange standards.

### Concluding Remarks

Those working to build community- or regionwide HIEs must effectively address the unique legal, organizational, and technical challenges that might otherwise constrain efforts to improve the safety, quality, and efficiency of care delivery. Although these hurdles are daunting, lessons from the project suggest that they can be minimized.

Start by planning an incremental approach. Engage consumers early in the development of privacy and security policies. Support more rapid development and adoption of national standards to help lower the cost of operation. Through a series of small steps, the larger goals of HIE can be realized.

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*The CHCF was a funder of the Santa Barbara County Care Data Exchange.*

### NOTES

1. D.J. Brailer, 1999 Feasibility Study (Oakland, Calif.: California HealthCare Foundation, July 1999).
2. See R.H. Miller and B.S. Miller, "The Santa Barbara County Care Data Exchange: What Happened?" *Health Affairs* 26, no. 5 (2007): w568-w580 (published online 1 August 2007; 10.1377/hlthaff.26.5.w568); and D.J. Brailer, "From Santa Barbara to Washington: A Person's and a Nation's Journey toward Portable Health Information," *Health Affairs* 26, no. 5 (2007): w581-w588 (published online 1 August 2007; 10.1377/hlthaff.26.5.w581).
3. CHCF, "National Consumer Health Privacy Survey 2005," November 2005, <http://www.chcf.org/topics/view.cfm?itemID=115694> (accessed 17 July 2007).