January, 2007

The evolution of public health information exchange

by Noam H. Arzt, PhD

For public health agencies developing integrated health information systems, new risks and benefits are emerging rapidly on the horizon. The ways in which public health is increasingly exchanging information with health-care providers, hospitals, government, insurers, and families demand a closer look at the networked information environment.

Information is one commodity that gains value the more it is used. Public health stands to benefit from a landscape of increasing opportunity to exchange information with more sources and users. One area is the growth of Health Information Exchange Networks (HIEN), in which public health runs the risk of being excluded. Public health can become an integral player in the HIEN scenario by embracing and promoting standards, opening access to its program-based database information, and organizing focus groups of stakeholders to make sure that everyone—including public health—has a place at the table.

Figure 1

Over the past several years, public health systems have evolved from program-specific, stove-pipe systems often based on aging mainframe or personal computer technologies, to more robust specialized systems using modern database management systems on more reliable platforms. Some have evolved into integrated systems supporting a wider variety of patient-centered or case-centered functions **(Figure 1)**. With the current national push toward electronic medical records (EMR), public health *applications* may become less important, and users will increasingly want to access data through their *existing* institutional systems. This access will likely be enabled by "back-end" data exchange between EMRs and public health registries and other systems transparent to users, who will see integrated data appear within their applications. The benefits of seeing a richer base of data without the additional cost of manual data entry will help drive provider participation in data exchange.

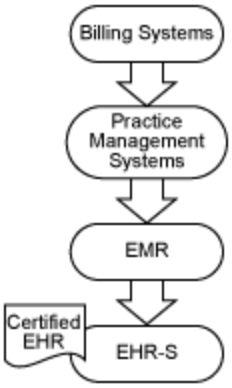

Figure 2

Similarly, provider systems have also evolved **(Figure 2)**. Initially, they focused on administrative functions (e.g., practice management, billing, and insurance reimbursement) but have since evolved to include clinical functions (e.g., EMRs). Clinical systems will increasingly need to comply with the Health Level 7 Electronic Health Record standard (HL7 EHR), and to stay viable in the marketplace, comply with minimum functional standards and be independently certified as compliant. Many different solutions—large and small—are available to provider practices today, and these products will likely be consolidated as standards compliance becomes more important.

New, more complex ways of sharing data are also arising with the advent of the Health Information Exchange Network (HIEN) operated by the Regional Health Information Exchange (RHIO). These collaborative organizations focus on health data exchange in a community, county, or even a state-wide basis **(Figure 3)**. They have a wide and varied set of participants (providers, labs, hospitals, health plans, public health agencies, pharmacies, and patients/citizens).

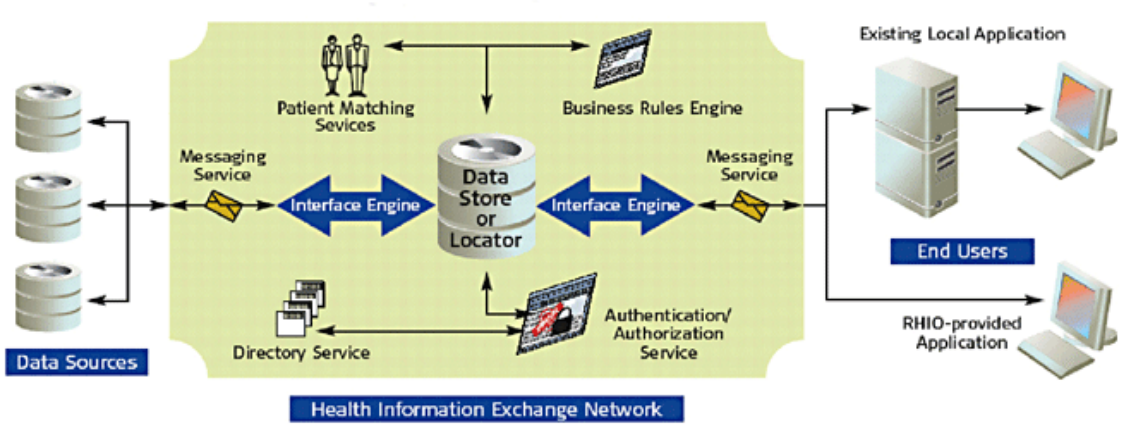

Figure 3

(over)

Primarily driven by private-sector participants, RHIOs sometimes involve public health as a key player in their formation and operation. While the emphasis is typically on exchanging clinical data to support patient care, some health data exchanges focus on health services data instead of—or in addition to—their clinical needs.

Immunization registries and integrated child health information systems are good examples of mature, pre-HIEN deployments. In today's broadening data exchange environment, states face some risks if their information systems integration planning does not take into account evolving technologies, methodologies, relationships, and standards that may affect them. These risks include:

- Public health applications targeted at users in provider settings may have slower adoption rates as organizations encourage (or require) users to stay with institutionally-supported applications. This is especially true in hospital and large ambulatory care settings, but this phenomenon also appears in local health departments that deploy more comprehensive services automation systems.
- Pressure will build for providers to interoperate *solely* through HIENs. This may affect the public health data exchange partnerships as providers may be required to exchange data with the RHIO and may not want to exchange specific data with a public health program database as well. Though many RHIOs are just beginning to focus on clinical data exchange, and public health programs are typically not among their early pilots, with sufficient momentum RHIOs will likely become *the* driving force and context for health information exchange in their jurisdictions.
- Richly functional public health systems run the risk of becoming used primarily as data repositories as users lose access to more advanced features. For instance, chronic disease registries contain disease pathways that define special prevention or treatment protocols typically not found in an EMR. If providers are prevented from accessing the chronic care registry directly they stand to lose access to these features. In the case of an immunization information system, which may also function as a repository, providers could lose access to algorithms, reminder/recall notice functions, and practice-level coverage assessment, which also are not typically found in their local systems. As they look to improve the functionality of their information systems in the future, public health needs to consider the best way to continue to offer these services and reach the largest number of providers effectively.
- While many specialized features are part of the approved HL7 EHR specification[1] they are not currently *required* for certification.[2] This means that as providers are driven to *certified* systems they will find that those systems do *not* include the features needed to support key public health functions.

Public health agencies, however, have a lot to gain by participating in HIEN/RHIO activities, including:

- Many of public health's data trading partners will choose to interoperate with an HIEN and reduce (or eliminate) superfluous connections.
- Public health can gain access to data and trading partners who previously might not have participated in its initiatives.
- It's better to be an insider than an outsider: As the medical community moves in this direction, public health should be an active participant—or risk being left out of the network.

For public health agencies, three imperatives flow from these observations:

1. Embrace emerging national standards for system interoperability, and modify systems to accommodate those needs. HL7 functionality is the best example for systems integration standards and is a concrete step in this direction.
2. Enable "special functions" of public health systems to be accessed directly by user systems. This is an area that systems integrators should consider strongly, as projects are not currently architected to deliver services in this way.
3. Organize a formal informatics focus or program in the agency to engage in and support local, regional, and national initiatives. This is often done through relationships with medical informatics programs at local universities or academic medical centers, health information research organizations, and other government or not-for-profit entities, such as healthcare quality improvement organizations or professional societies.

---

[1] See http://www.hl7.org/ehr/
[2] See http://www.cchit.org/

Noam H. Arzt is president of HLN Consulting, LLC, which provides technology services to public health agencies and their not-for-profit partners. He can be reached at arzt@hln.com.

HLN Consulting, LLC
8449 Christopher Ridge Ter
San Diego, CA 92127

Email: info@hln.com
Phone: 858-538-2220
Fax: 858-538-2209
http://www.hln.com