

Case Study: Public Health Use of HIE

Indianapolis Communicable Disease Surveillance and Emergency Preparedness

The **Indiana Network for Patient Care (INPC)**, founded at the Regenstrief Institute, Inc., began standardizing and linking information across multiple hospital systems in 1994. Thus it has “grandparent” status among HIE organizations, and began well before **electronic health records (EHRs)** were common practice. INPC is now the core registry at the center of the **Indiana Health Information Exchange (IHIE)**, which, like the **Marion County Public Health Department**, is centered on Indianapolis.

Early Efforts

Like many early HIE organizations, IHIE focused first on receiving and storing information about patient care from multiple organizations, enabling statistical analysis as well as queries about care received by individual patients across multiple providers when appropriate. This near-real-time collection of electronic data about emergency visits and admissions enabled **syndromic surveillance**, or statistical tracking of the numbers of patients presenting for care with various symptom combinations.

Building a Partnership

In 2004, the system partnered with the Indiana State Department of Health to implement such surveillance, which now includes more than 110 hospitals. Marion County has used this data for a wide range of applications, including:

- to track seasonal and pandemic influenza,
- to assess the possible impact of other outbreaks,
- to detect carbon monoxide threats, and
- to assess the severity of heat wave health effects.

IHIE also began providing “push” delivery of laboratory results and other messages and documents in the early 2000s in a program called “Docs4Docs.” Once these data streams were established, IHIE could detect and route reportable disease laboratory results to the Marion County health department. This increased the speed and the quantity of reportable lab results received, while reducing the reporting workload on laboratories.

Working Toward Greater Efficiency

To facilitate rapid, accurate public health classification of electronic reports, IHIE adds key provider and patient demographics (like phone numbers) to reports. It is also using natural language processing to improve the detection and reporting of reportable conditions. To further automate case management, IHIE is piloting the use of its Clinical Decision Support system to provide partially pre-filled case reports to physicians for completion and submission to Marion County.

Marion County communicable disease nurses also now access cases’ cumulative healthcare data on a secure IHIE portal, reducing the need for many phone calls and faxes to healthcare providers. Nurses find these processes are making reporting and case management more efficient. They are the product of

several incremental projects funded by the Centers for Disease Control and Prevention (CDC) and the Agency for Healthcare Research and Quality (AHRQ), each building on the prior. Marion County has also used IHIE:

- to educate physicians about emergencies like H1N1 influenza,
- to identify high-risk patients for physicians during disease outbreaks, and
- to prompt emergency departments to take chest X-rays when hard-to-find people with positive TB screens show up for services.

Looking Forward

The partnership between Marion County and IHIE is far from a one-way street. Many of these projects have been supported through funding from the CDC and other public health organizations. Thus, public health support for these use cases has helped expand and deepen the development and maintenance of IHIE technologies. The close relationship between IHIE and a university informatics department also helps to fuel innovation.

Sources

Informants	Joe Gibson and Cindy Murphy, Marion County Public Health Department Brian Dixon, Regenstrief Institute
For More Information	Shandy Dearth Epidemiology Administrator, Marion County Public Health Department sdearth@marionhealth.org

Selected References

Dixon BE, McGowan JJ, Grannis S. Electronic laboratory data quality and the value of a health information exchange to support public health reporting processes. AMIA Annual Symposium Proceedings. 2011:322-30
Fidahussein M, Friedlin J, Grannis S. Practical challenges in the secondary use of real-world data: The notifiable condition detector. AMIA Annual Symposium Proceedings. 2011:402-8
Friedlin J, Grannis S, Overhage JM. Using natural language processing to improve accuracy of automated notifiable disease reporting. AMIA Annual Symposium Proceedings. 2008:207-11
Gamache R, Stevens KC, Merriwether R, Dixon BE, Grannis S. Development and assessment of a public health alert delivered through a community health information exchange. Online Journal of Public Health Informatics. 2010:2(2)
Grannis S, Michael W, Gibson J, Overhage JM. The Indiana Public Health Emergency Surveillance System: Ongoing processes, early findings and future directions. AMIA Annual Symposium Proceedings. 2006:304-0
Overhage JM, Grannis S, McDonald CJ. A comparison of the completeness and timeliness of automated electronic laboratory reporting and spontaneous reporting of notifiable conditions. American Journal of Public Health. 2008. 98(2):344-50