

The Louisiana Public Health Information Exchange

An Overview

A collaborative initiative between the Louisiana Office of Public Health, the Louisiana State University Health Care Services Division and the Louisiana Public Health Institute.



Overview

One important job for the Louisiana Office of Public Health (OPH) is ensuring that Louisianans with infectious diseases learn about their diagnosis and receive appropriate medical care. For certain conditions (including HIV, syphilis and tuberculosis), OPH works to fulfill this duty by sending a staff person to speak with newly diagnosed patients about undergoing proper treatment. However, such methods can't reach *every* Louisiana patient with an infectious disease. Sometimes, OPH can't find patients after an initial diagnosis. Other times, patients may drop out of care years after learning that they have an infectious illness.

Obviously, connecting such individuals to treatment would help improve both individual and population health in Louisiana—especially in light of recent research which shows that persons taking HIV antiretroviral medications are less likely to transmit the disease.

With the above challenges in mind, OPH partnered with seven Louisiana State University (LSU) Health Care Services Division hospitals to create the Louisiana Public Health Information Exchange (LaPHIE). The exchange uses OPH's surveillance data to alert LSU clinicians that a patient might have an untreated case of HIV, tuberculosis or syphilis requiring a doctor or nurse's attention. Specifically, OPH sends a LaPHIE message to LSU clinicians when they meet with the following types of patients:

- Individuals who have tested positive for HIV but may be unaware of their status (according to OPH records),
- Individuals with confirmed HIV infection who currently do not appear to be in care (OPH has no recent viral load or CD4 laboratory tests on file),
- Children of HIV-positive mothers who may have HIV (but OPH's records are insufficient for a conclusive diagnosis),
- Individuals who have tested positive for syphilis or tuberculosis and do not appear to have completed a full course of treatment (according to OPH records).

The cutting-edge program creates a secure, limited connection between a protected list of "out of care" persons housed on the OPH computers and the electronic medical record (EMR) system at LSU. The result: each time a patient checks into a LSU emergency room, clinic, or hospital, LaPHIE logic automatically examines the OPH file to determine if the patient is on OPH's out of care list. If LaPHIE's logic determines that a patient is out of care, it automatically sends a message to LSU's EMR. Then, when an authorized LSU clinician logs in to the patient's record, he or she sees a message from OPH—along with a list of suggested actions (as shown in Figure 1). The content of these messages varies depending on the patient's illness and type of care that the patient might need.

CLIQ v1.0.22 - 3.14

CLIQ Clinical Inquiry

Welcome,
Jane Herwehe
Physician

Wed, October 29, 2008

◀ Back Forward ▶

Search

Patient Summary

Problem List

Demographics

Visit History

Immunizations

Laboratory ▶

Microbiology ▶

Blood Bank ▶

Pathology ▶

Radiology ▶

Cardiology ▶

Clinical Reports ▶

Print

path

Patient Name: Ted ZzzTest MRN: HIV8001 (MCLNO)
Age: 39 Years Gender: Male

Patient may require follow up


Details: Intervention Needs for HIV

The Louisiana Office of Public Health has received and confirmed test results that indicate that the patient has HIV infection and possibly has not been informed of the results.

Please proceed with the Recommended Actions for intervention.

Recommended Actions	Actions Taken
<p>Mouse over recommended and action taken for more details</p> <p>Assess need for intervention</p> <p>Offer education</p> <p>Assess patient and need for treatment</p> <p>Initiate treatment and monitoring plan</p>	<p>Please check the actions that you are completing with the patient. Some actions may already contain a check indicating completion by another provider. Other actions may not apply and can be left blank. Please hit SAVE once you have completed your actions.</p> <p><input type="checkbox"/> Discussed OPH message and need for treatment with the patient</p> <p><input type="checkbox"/> Re-ordered confirmatory Western Blot</p> <p><input type="checkbox"/> Assessed stage of illness</p> <p><input type="checkbox"/> Scheduled follow up appointment</p> <p><input type="checkbox"/> Documented patient report of receiving treatment at another site</p> <p><input type="checkbox"/> Confirmed patient is not interested in treatment at this time</p>

Comments:

 The Delta AIDS Education & Training Center is available for training regarding HIV/AIDS at 504-903-0788; any questions about HIV/AIDS can also be addressed by calling 504-903-0623

CDC Website... Save

Message from OPH

Suggested actions for LSU clinicians

Figure 1 The LaPHIE system puts public health information right in front of a clinician just as they are meeting with a patient. For instance, if an out-of-care HIV positive patient came into an LSU emergency room with an asthma complaint, LaPHIE would show this screen on the patient’s EMR.

How it Works

LaPHIE puts current public health information directly in front of a clinician by embedding a message from OPH into a patient's EMR. From a technical standpoint, this overall process is actually the culmination of many smaller tasks performed by different computer systems at OPH and LSU. The picture to the right describes the major steps, which include:

One. When any patient registers at an LSU hospital, his or her identifying information is added to the LSU computer system.

Two. LSU electronically notifies OPH (via LaPHIE) that the patient has arrived at an LSU facility. It sends the patient's demographic information to a secure, designated LaPHIE server housed at OPH.

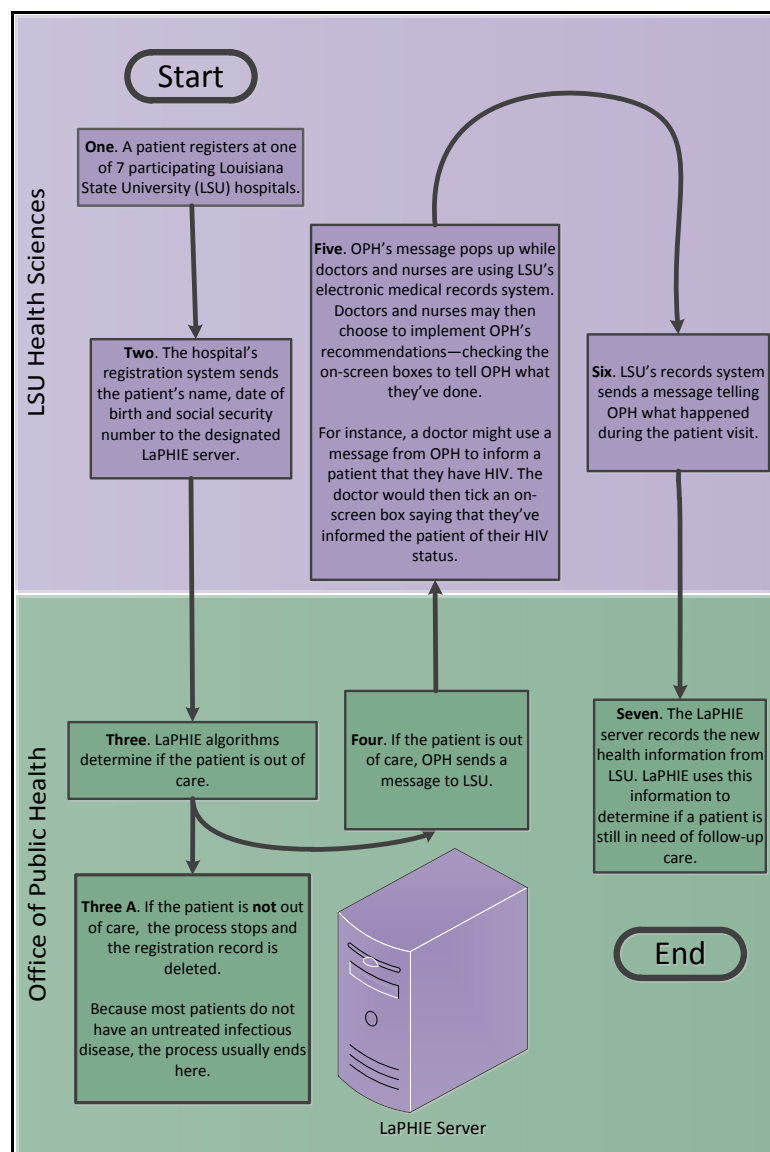
Three. When OPH receives a message from LSU, the LaPHIE logic checks the out of care patient database to determine if the patient has not been receiving treatment for his or her infectious disease.

Four. If OPH finds a match in the out of care database, it automatically sends a standard, disease-specific electronic message to the LSU EMR system.

Five. The LSU system receives and stores the message from OPH. Then it displays the message as a pop up alert for authorized clinicians who open the patient's EMR within the visit timeframe. When clinicians click on the alert, they see a list of suggested actions, which can be checked off on screen.

Six. After a patient meets with a clinician, the LSU system automatically returns a message to OPH with current contact information and the reporting of how doctors and nurses responded to the message.

Seven. OPH adds this information to its databases, which are updated nightly to determine which individuals should be included in the out of care dataset.



Legal and Ethical Concerns

Sharing protected health care and public health information is a complex (but solvable) technical problem. Yet implementing a system like LaPHIE raises many non-technical challenges and questions. Under what circumstances is it legal to share health information between health care providers and public health professionals? Is it ethical? Is building a system like LaPHIE the "right thing to do" in terms of protecting the health of individuals and the health of the population?

To answer such questions before building the exchange, LaPHIE partners formed a legal compliance and ethics workgroup consisting of public health officials, HIV-infected persons, doctors and nurses, attorneys familiar with Federal and State health laws, HIV advocates, and a medical ethicist. Over the course of a year, the workgroup developed a list of legal questions to be answered, reviewed relevant legislation, and discussed plans for the exchange with national experts in confidentiality and biomedical ethics. The group also enlisted the expertise of an independent market research firm—charged with conducting interviews and focus groups to learn how potential patients would view the project.

Following this legal and ethical analysis, the workgroup concluded that the LaPHIE project ought to be implemented because it worked to protect both individual and population health. They also found that, in Louisiana, there were no laws prohibiting information sharing for the purpose of improving individual care. In fact, the group found Louisiana legislation that facilitated communication between public health authorities and health care providers to improve treatment.

The group's conclusions were further fortified by focus group and interview results from Louisiana residents, who reported that they

were in support of sharing protected information with nurses and doctors if the purpose was to give patients information and provide improved healthcare.

Frequently Asked Questions

What organizations created LaPHIE?

LaPHIE is a collaboration between the LSU Health Care Services Division, the Louisiana Office of Public Health and the Louisiana Public Health Institute.

The initiative is funded by the Health Resources and Services Administration (HRSA) as a part of its Special Project of National Significance (SPNS) initiative.

Do other states have exchanges like LaPHIE?

No. LaPHIE is the first electronic data exchange that uses public health surveillance information to provide patient-specific, EMR-integrated health information at the point of care.

Is LaPHIE a repository of all persons with HIV, syphilis or tuberculosis in Louisiana?

No. LaPHIE is designed to only identify patients who are "out of care." In some cases, this means that patients may not have received diagnostic test results and thus are unaware they have been diagnosed with a particular disease. In other cases, this means that patients may be aware of their disease but may not be undergoing treatment.

See "Protecting patient information" on page 4 to learn how LaPHIE ensures that patient information in its out of care database stays private.

Is LaPHIE the primary public health tool for stopping infectious diseases in Louisiana?

No. The LaPHIE messaging system supplements other public health interventions from OPH. For instance, OPH sends staff people to speak with Louisianans who have been newly diagnosed with HIV. LaPHIE only targets residents who have never entered care or who have dropped out of care after starting treatment for their illness.

Who can see LaPHIE disease alerts on an EMR?

Only LSU physicians, nurse practitioners and nurses have access to LaPHIE disease alerts, which constitute protected health information (PHI). In preliminary focus group discussions and interviews, respondents said that they strongly preferred that only their physicians and nurses be able to see this information. They felt that these health care professionals would be the most respectful of their privacy and best able to provide helpful information and offer treatment.

Successes

LaPHIE's early successes have been promising. In its first 24 months of operation, the system has identified over 400 Louisianans with untreated HIV—helping to link these residents back to care.

LaPHIE operates twenty-four hours a day to ensure that patients in need of treatment are connected with nurses and doctors when they're in a medical setting. System maintenance requires minimal time and expenditure—making it an efficient, added tool for improving healthcare for individuals who are otherwise hard to reach.

Creating a LaPHIE Project in Your State

Setting up a LaPHIE system does take time. It requires extensive and thoughtful planning, committed leadership, input from a variety of key players, a robust information technology infrastructure and a team of skilled computer programmers.

Planning for a LaPHIE Project

Developing a project like LaPHIE entails far more than simply directing software developers to create the system. In Louisiana, LaPHIE partners took the following steps before programmers wrote a single line of code:

- Conducted consumer research
- Developed and refined inclusion criteria for the LaPHIE “out of care” data set
- Identified and agreed upon the strengths and limitations of surveillance data
- Participated in an ethics review by national experts in biomedical ethics, public health ethics and AIDS privacy
- Requested a legal review of Federal and State legislation related to sharing of health care and public health information
- Assessed and modified technical infrastructure at OPH and LSU
- Reviewed OPH and LSU security protocols and confidentiality policies
- Designed a series of clinical decision support prototypes for the EMR with clinicians and public professionals
- Executed a partnership Affiliation and Data Sharing Agreement
- Established an evaluation methodology

Personnel required for a LaPHIE project

Building LaPHIE required many different kinds of expertise. Specifically, LaPHIE brought together doctors, nurses, laboratory

professionals, public health leaders, epidemiologists, attorneys, HIV advocates, HIV affected persons, software developers, and network administrators—who all worked together to create the project.

LaPHIE did not fill every team member’s work week, but it did require continued effort, decision making and input from many different personnel.

Information technology involved in LaPHIE

When software developers sat down to actually implement the LaPHIE system, they made extensive use of information technology resources already in place at both organizations. OPH already tracked cases of infectious diseases using several surveillance databases. LSU had an existing EMR system. Each office had technology and protocols that allowed them to share secure messages using their networks.

From there, developers on each side needed to create systems that would accept, interpret and respond to communications from the other organization.

At LSU, developers used their own in-house application to receive and process incoming messages. They focused their efforts on finding relevant yet simple ways to add public health information (and corresponding clinician support) into LSU’s EMR. They made sure that LaPHIE alerts would work seamlessly within hospital and clinician workflows.

At OPH, developers turned to an open source, no-cost application called Mirth to handle the task of responding to messages from the LSU system. Mirth accepts messages from a source, looks up records in a database, and returns an appropriate reply. Even though Mirth can be used for free, professional software developers

were needed to install the highly-technical program and configure the rules that it uses to send and receive communications.

Protecting patient information

All patient data exchanged via LaPHIE constitutes HIPPA-protected PHI. Therefore, LaPHIE partners at OPH and LSU took steps to ensure that such only the minimally necessary information would be transmitted securely—and would be shared *only* with authorized clinicians.

Specifically, LaPHIE does all of the following to ensure that patient data is maximally protected:

- The database of “out of care” patients resides on a secure server behind a firewall at OPH. The CLIQ system resides on a secure server behind a firewall at LSU.
- All information passed between the organizations travels through a secure, private channel employing state-of-the-art encryption.
- LSU shares only minimal patient demographic data with OPH (so that OPH can determine if the patient is out of care). OPH does not store this data in order to protect patient privacy.
- When OPH finds an out of care patient, it shares *only* a standardized, disease-specific alert message with LSU. This ensures that OPH shares only the minimal amount of patient information needed.
- When LSU clinicians respond to an OPH alert for an out of care patient, LSU *only* sends OPH the clinician’s responses (so that OPH can determine if the patient is still out of care).

LSU does not send any additional information about the patient's visit.

Maintaining LaPHIE

LaPHIE is a complex computerized system so there are various ways that the normal flow of messages may be interrupted. Thus, even when LaPHIE is running smoothly, software developers and network administrators must still be on hand to diagnose and fix occasional technical glitches in the exchange.

LaPHIE also requires limited additional support from OPH Surveillance staff—who must ensure the accuracy of the out of care dataset. In addition, if clinicians miss a LaPHIE alert, an OPH staff member may follow up with the patient in person.

Next Steps

LaPHIE's novel approach and early successes have attracted the interest of many other organizations devoted to improving both healthcare delivery and overall population health.

Nearly all of the original LaPHIE partners continue to meet to discuss ways that LaPHIE and LaPHIE-like systems may help improve community health both within Louisiana and beyond.