

OSDH Electronic Lab Project Description

1. Background

Monitoring the occurrence of diseases is a cornerstone of public health decision-making. This monitoring, referred to as public health surveillance, can be used to trigger case or outbreak investigations, follow trends, evaluate the effect of prevention measures such as immunizations, and suggest public health priorities. Because disease trends have the potential to shift rapidly, especially with infectious diseases, surveillance needs to be ongoing, timely, and complete.

Each state and territory has mandated requirements for laboratories to report positive laboratory tests indicative of reportable diseases to public health officials. In the past, these reports were written by hand on forms provided by health departments and mailed to appropriate offices. With computerization of laboratories, it has become possible for laboratories to send reportable data to health departments electronically. Oklahoma administrative law requires that specific diseases be reported to the Oklahoma State Department of Health (OSDH). The list of Oklahoma's mandated reportable diseases may be found at

www.ok.gov/health/Disease,_Prevention,_Preparedness/Acute_Disease_Service/Disease_Reporting/index.html.

2. Project Objective

Oklahoma has begun facilitating electronic transmission directly from large laboratories in the state due to the benefits described below and in light of the current national climate. The objective of the Oklahoma Electronic Laboratory Reporting (ELR) project is to convert selected, major Oklahoma laboratories to provide positive lab results for reportable diseases/organisms to the OSDH via secure electronic transmission, replacing the conventional paper method of reporting and greatly enhancing the online/web based data entry process utilized by practitioners.

3. Advantages of Electronic Lab Reporting (ELR)

There are numerous advantages and reasons for converting to electronic lab reporting, which are outlined below:

- a) Meet public health reporting guidelines;
- b) No duplicate data entry;
- c) Lab technicians no longer have to enter data manually or complete forms by hand;
- d) Centralization of reporting to one data repository vs. reporting specified diseases to designated program areas (Communicable Disease Div, Tuberculosis Div, HIV/STD Service, etc.);
- e) Increased data security;
- f) Fast transformation of data;
- g) Transmission consistency;
- h) Increased timeliness of reporting:
 - i. In the Hawaii ELR project, disease reports were received an average of 3.8 (95% CI 2.5-5.0) days earlier than the conventional report system¹ ;
 - ii. In the Pittsburg, PA ELR project, ELR reports were received a median of 4 days earlier than conventional reports (1 day vs 5 days)² ;
 - iii. In the Indiana ELR project, ELR reports were received on average 2.5 days earlier than through the conventional system³ ;
- i) Increased sensitivity of reporting system:
 - i. In the Hawaii ELR project, the number of reports submitted to the state department of health increased 2.3 fold (95% CI 2.0-2.6) over the conventional reporting system¹ ;
 - ii. In the Pittsburg, PA ELR project, the ELR system received 11% more reports than the conventional system² ;
- j) Increase in providing public health with pertinent data:
 - i. In the Hawaii ELR project, significantly more data fields were complete in reports transmitted via ELR when compared with the conventional reporting system¹ ;

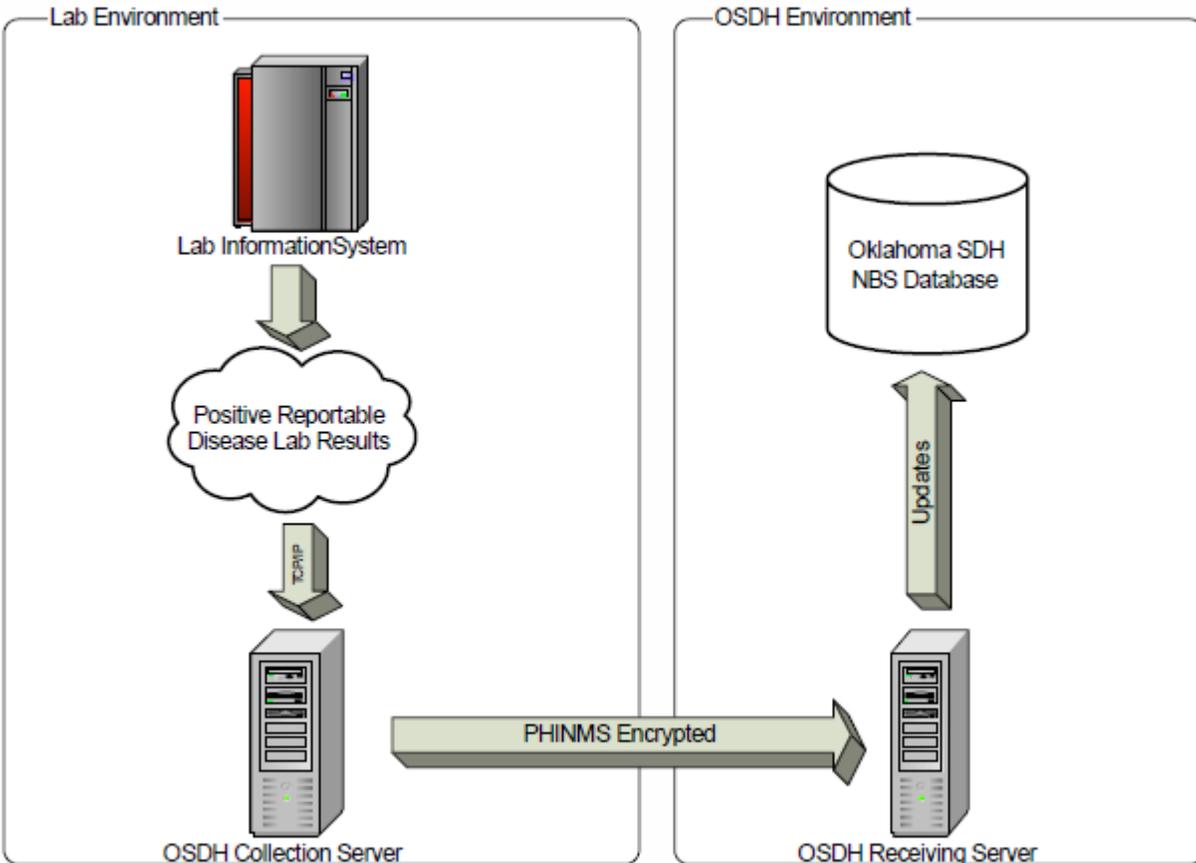
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The OSDH has established a central repository for collecting positive lab results for reportable diseases. This repository is implemented using the Center for Disease Control (CDC) NEDSS Base System (NBS) database as provided by the CDC. This database structure is currently installed and running at the OSDH.

The CDC has also provided software to securely send and receive electronic lab data to and from the CDC and state departments of health as well as to and from laboratories and the state departments of health. This software is called PHINMS.

Using the PHINMS software, the OSDH has developed processes to accept positive lab results from a laboratory information system, encrypt the data via the PHINMS software, transmit the data via the PHINMS software, decrypt the data using the PHINMS software, and update the NBS data repository.



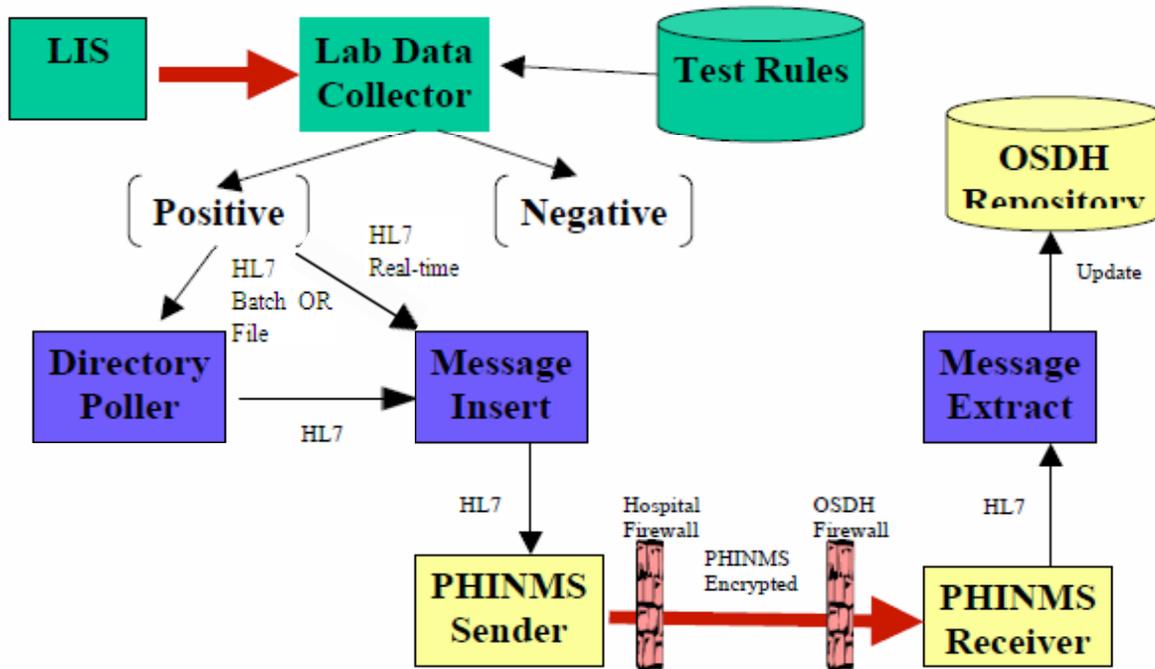
The positive reportable lab results would be provided by the labs in the HL7 Version 2.5.1 for ELR format as described in the draft

HL7_Version_2.5.1_Implementation_Guide_Electronic_Laboratory_Reporting_to_Public_Health_(US_Realm)_R1.pdf and can be found on the web at

http://www.ok.gov/health/Disease,_Prevention,_Preparedness/Acute_Disease_Service/Disease_Reporting/How_to_Report/index.html or in a format otherwise specified by OSDH and agreed upon by contractor after award.

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Messages in a HL7 format will be securely transmitted using the PHINMS application which is provided and supported by the CDC at no cost. The data can be provided in a “real-time” stream or by creating an HL7 batch file on the lab server, which would be dropped into a directory on the lab PHINMS sender. PHINMS refers to this type transmission as “folder polling”. The OSDH IT department will help install and configure this PHINMS sender application, if needed.



References

¹ Effler P, et. al. *Statewide system of Electronic Notifiable Disease Reporting from Clinical Laboratories.* Journal of the American Medical Association; 282: 1845-1850.

² Panackal A, et. al. *Automatic Electronic Laboratory-based Reporting of Notifiable Infectious Diseases at a Large Health System.* Emerging Infectious Diseases; 8: 685-691.

³ Overhage J, et. al. *Electronic Laboratory Reporting: Barriers, Solutions, and Findings.* Journal of Public Health Management Practice; 7:60-66.