



Use Case Scenario Summary

Use Case Scenario Name:	State Bureau Lab Orders-Results
Use Case to Which Scenario Belongs:	Lab Orders-Results
Sponsor:	Michigan Department of Health and Human Services' Bureau of Laboratories and Medical Service Administration's Office of Medicaid Health IT
Date:	May 3, 2017

Executive Summary

This brief section highlights the purpose for and value of this scenario. The executive summary gives a brief description of the scenario's importance while highlighting expected positive impact.

Under certain circumstances lab specimens, such as blood spot samples, are sent to a state's bureau of laboratories for testing. These specimens are typically sent along with requests to receive lab results as soon as possible.

Processing these requests quickly can be critical. Newborn screening labs such as blood spot can detect life-changing and, often, life-threatening genetic and metabolic disorders. The results can lead to immediate treatments for conditions such as:

- Phenylketonuria
- Cystic fibrosis
- Sickle cell disease

Efficiently processing these requests also allows public health departments to monitor and track possible pandemics and epidemics.

Purpose of Use Case: The State Bureau Lab Orders-Results use case scenario allows participants to electronically and efficiently deliver demographic and test order information for specimens that were sent to the state lab for testing, and in turn receive the results of those tests much more quickly.

Overview

This overview goes into more details about this scenario.

Enabling electronic result delivery from state laboratory systems gives providers faster access to results so they can act on that information in an optimal window for effective treatment. Benefits include:

- Quickly and efficiently identifying and addressing threats to public health
- Allowing primary care providers to promptly review results within the context of the patient's history and treatment plan

This scenario allows for that more rapid and efficient delivery of lab results to providers by re-using the same technology already in place for transporting and delivering other types of public health information (i.e., immunizations, reportable labs, and syndromic surveillance messages). Lab results flow through the same electronic pathways but in this case from the state to providers.

This scenario also allows for implementation of a broad Health Level 7 (HL7) messaging process for test order receipt and test outcome delivery from the state bureau of laboratories.

Persona Story

To explain this scenario, this section follows a persona example from start to finish.



Aiden Michael Jones is only a few days old, but he already has a lot to feel lucky about. Aiden's parents (Angelica and Darren) could not be more in love with him and playfully take turns holding him in the hospital while showing him off to relatives and promising everything under the sun for his happiness. The doctor and nurses said he was "perfect" when he first cried in the delivery room and both parents had to agree.

In the hospital's nursery Aiden was given a routine newborn blood spot screening. The aim with the test was to screen for nine rare (but serious) congenital medical conditions. The blood spot sample was sent to the state bureau of labs for testing. The record of the screening and its result were logged in the hospital's electronic medical record and then shared electronically with the newborn screening system for the state.

Unfortunately, Aiden tested positive for cystic fibrosis. Both Angelica and Darren were heartbroken over the news, but the hospital staff quickly assured them that the screen catches the disease early enough so immediate intervention can begin. The blood spot screening allows medical professionals to address Aiden’s condition during the critical early days of his life to alleviate his symptoms. That intervention will reduce the severity of Aiden’s condition, vastly improve his quality of life, and increase his life expectancy, none of which would have been possible without the early screening.

The test results were also shared with the state, including a chronic disease management registry, so if Aiden’s parents need help and more information there is a team waiting there.

Thanks to the test and the ensuing coordination between his healthcare team and parents, Aiden has an opportunity for a long and healthy life.

Diagram

This diagram shows the information flow for this scenario.

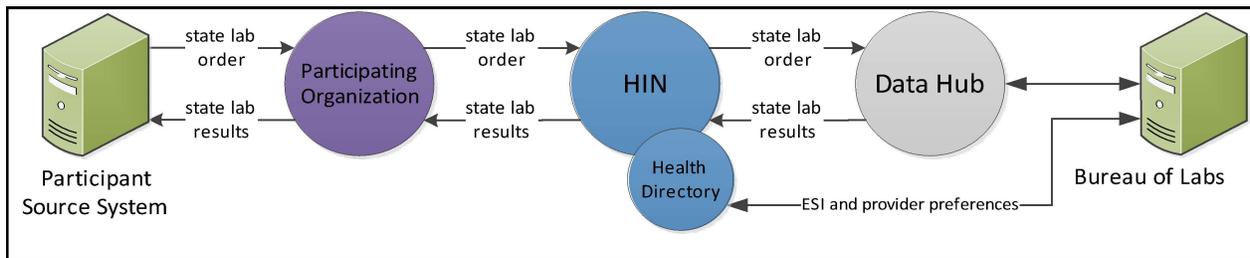


Figure 1. Data flow to send lab orders to state bureau of labs and receive results

1. Ordering provider sends lab order to the state’s health information network (HIN) via a trusted data sharing organization (participating organization)
2. HIN routes order to a bureau of labs via the state’s data hub
3. When lab results are ready, the bureau queries the state’s Health Directory to obtain electronic service information (ESI) and preferences for ordering provider and any copied provider(s)
4. Bureau adds ESI to the lab results message and routes to HIN via the state’s data hub
5. HIN routes the results to ordering provider and copied provider based on ESI

Regulation

This section describes whether this scenario is being developed in response to a federal regulation, state legislation or state level administrative rule or directive.

Legislation/Administrative Rule/Directive:

- Yes
- No
- Unknown

- Michigan Law MCL-333.5431 of the public health code establishes blood spot testing.

Meaningful Use:

- Yes
- No
- Unknown

Cost and Revenue

This section provides an estimate of the investment of time and money needed or currently secured for this scenario.

In Michigan, the Department of Health and Human Services (MDHHS) secured the financing needed for the State of Michigan to develop this scenario in the 2014 Health Information Technology (HIT) Advanced Planning Document (APD), Activity 21, Sec. 4 – Bureau of Labs: Newborn Screening and STARLIMS (Laboratory Management Systems).

MDHHS Bureau of Laboratories also has financial grant support for HIE development. MDHHS and the Michigan Health Information Network Shared Services (MiHIN) are contributing to staff the project. Project resources (including vendor development of the message validator at MiHIN) have also been secured and include business and technical support resources.

The project financially covers the following components:

- HL7 message development, based on the national standard
- Development of the implementation guide
- Development and deployment of a message validator at MiHIN
- Technical development and maintenance at MiHIN, MDHHS Data Hub, and destination system

- Piloting of the message
- MDHHS Bureau of Laboratories support for the development, implementation, and piloting of the activities
- Public health agency costs to disseminate labs, and to further route them as necessary (e.g. disease surveillance system costs to forward lab results to the local health departments)

Existing infrastructure at MiHIN and MDHHS can be leveraged for implementation of this use case scenario.

No revenue is projected for this scenario, although significant cost savings are anticipated based on faster, more efficient processing of lab orders and results, and improved care for patients resulting from these more efficient testing processes.

Implementation Challenges

This section describes the challenges that may be faced to implement this scenario.

Laboratory information management systems (which are systems that are used by laboratories) require information technology architecture enhancements and upgrades to consume a standard, incoming HL7 message.

HL7 language needs to be deciphered, consumed, and annotated accordingly by each unique system (STARLIMS and the NBS PerkinElmer system) upon receipt of the specimen.

In Michigan, there are private labs that currently send test results to MDHHS that may be reluctant to adopt a new standard format for sending and disseminating lab orders and results.

Vendor Community Preparedness

This section addresses the vendor community preparedness to readily participate in the implementation of this scenario.

For providers to qualify for Meaningful Use incentives, they must utilize Certified Electronic Health Record Technology (CEHRT). The Office of the National Coordinator for Health IT (ONC) established criteria for how an electronic health record (EHR) should record and report laboratory results. EHR systems are evaluated against these criteria following National Institute of Standards and Technology test procedures.

Technical capabilities for CEHRT must include the capability to electronically create reportable laboratory tests and results for electronic transmission in accordance with specified standards. EHR technology designed for the ambulatory setting must be certified to be able to receive and incorporate laboratory tests and results. Ambulatory EHR technology must be able to receive laboratory tests and results formatted in accordance with the HL7 2.5.1 standard.

The ONC has identified the following guides as the standards for these messages:

- *The HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Orders from EHR, Release 1 - US Realm*
- *The HL7 Version 2.5.1 Implementation Guide: S&I Framework Laboratory Results from EHR, Release 1 - US Realm*

These documents can be found at www.hl7.org.

Support Information

This section provides known information on this support for this scenario.

Support can come from multiple levels (Governor, Federal or State Legislature, Michigan HIT Commission, Michigan State Departments, CMS/ONC/CDC, MiHIN Board, Participating Organizations, payer community, interest groups [e.g. MSMS, MHA], or citizen support).

Political Support:

- Governor
- Michigan Legislature
- Health Information Technology Commission
- Michigan Department of Health and Human Services or other State of Michigan department
- CMS/ONC
- CDC
- MiHIN Board

Other: NewSteps grant to pilot organization Michigan Medicine

Concerns/Oppositions: None noted

Sponsor(s) of Use Case

This section lists the sponsor(s) of this scenario.

- Michigan Department of Health and Human Services, Bureau of Laboratories
- Michigan Department of Health and Human Services, Medical Service Administration's Office of Medicaid Health IT

Metrics of Use Case

This section defines the target metrics identified to track the success of the scenario.

One critical metric will be the number of successful incoming HL7 orders for newborn screening blood spot and infectious disease testing at the state bureau of labs.

Another critical metric will be number of lab orders sent via health information exchanges, as compared to legacy methods.

- **Blood spot specific metrics:**
 - Number of sending sites using HL7 compared to legacy methods
 - Number of lab results sent to receivers through HL7
 - Data quality improvements realized from the use of HL7