LIS Implementation Challenges Guide

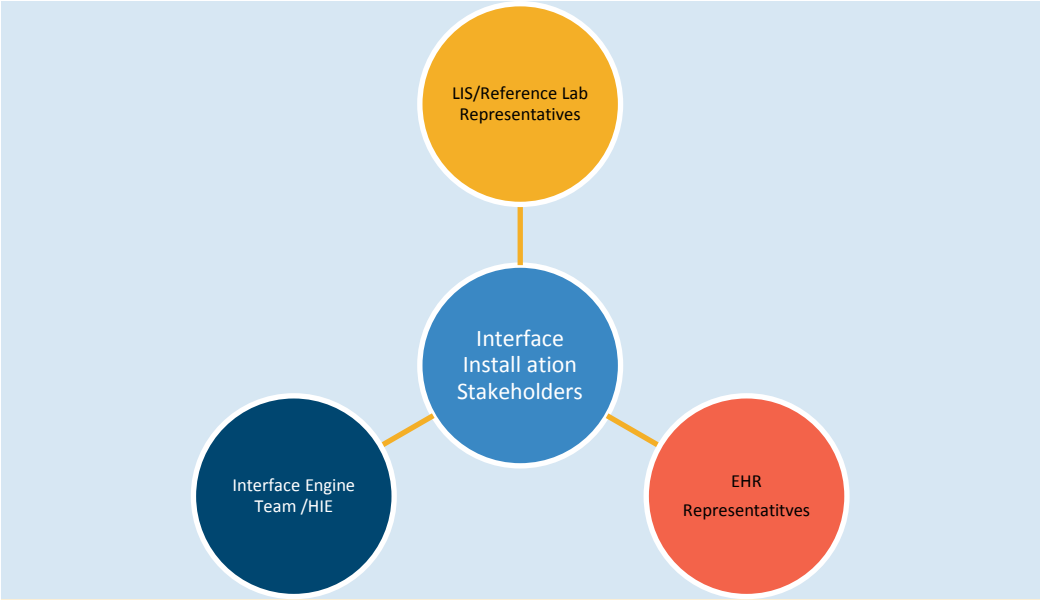
Introduction

Meaningful Use (MU) implementers face a number of challenges when (1) implementing a new Lab Information System (LIS) interface to meet the MU standards, or (2) upgrading a current LIS interface to meet the standards. Hospitals, large physician practices, and small physician practices differ in their approach to implementation, and it is important to be aware of these differences.

The purpose of this guide is to:

- Highlight the key stakeholders in the interface installation process
- Discuss the cost of implementation
- Outline the steps to implement a new interface and update an existing interface
- Define common implementation challenges
- Recommend solutions based on the different implementation contexts
- Highlight different implementation scenarios based on the context of the implementation

Key Stakeholders



The key stakeholders in the interface installation process include the LIS representatives (for a hospital or large physician group)/reference lab representative (small physician practice), the interface engine team, and the electronic health record (EHR) representatives. Their specific responsibilities consist of the following:

Stakeholder	Responsibilities
LIS/Reference Lab Representatives	Works with the interface engine team to set up the outbound results portion of the interface from the LIS or reference lab
Interface Engine Team*/Health Information Exchange (HIE)	Ensures the LIS and EHR can communicate via the interface, and are responsible for any data manipulation within the interface
EHR Representatives	Works with the interface engine team to set up the inbound results portion of the interface to ensure that results will properly file into the EHR

*For a small provider, this may be the EHR vendor.

Implementation Costs
In a hospital or large physician practice, the costs associated with a new LIS interface are dependent on the current contracts, the phase of implementation, and whether any current LIS interfaces can be leveraged. In a small physician practice, the cost of a reference lab interface may be included within the costs of their EHR implementation, with possible additional costs for maintenance after initial install.

Implementing a New LIS Interface

Use the following steps to implement a new LIS interface:

1. Analyze the LIS Interface Specifications

Interface specifications from both LIS (outgoing results) and EHR (incoming results) are analyzed by the interface engine team to see if the two systems will be able to talk without any translations/manipulation.

2. Discuss Options for Manipulation

Once it has been determined that the two systems can communicate (or where the gaps are), the LIS, EHR, and interface engine team will discuss best options for manipulation to ensure that the interface will meet defined MU criteria, including conformance to any standards outlined in the Lab Results Interface Implementation Guide.

3. Set Up the LIS Interface on the Outbound and Inbound Ends

Next steps include setting up the LIS interface on the outbound and inbound ends, and testing to ensure that any changes made to data in the interface function as designed and meet MU criteria. The interface is also tested to ensure that all Health Level Seven (HL7) messages are being transmitted securely, regardless of transmission method (secure virtual private network [VPN]).

Upgrading an Existing LIS Interface

Use the following steps to update an existing LIS interface

1. Analyze Current and Desired State of the LIS Interface

Refer to the standards and certification criteria to determine the desired state of the LIS interface.

2. Analyze Current State of LOINC Coding and Next Steps

Complete analysis of the current state of Logical Observation Identifiers Names and Codes (LOINC) coding and mapping. Work with the LIS and EHR representatives to ensure that whatever path is needed to meet LOINC requirements is compatible with your current system.

3. Set Up the LIS Interface on the Outbound and Inbound Ends with New Functionality

Implement new functionality in the result's out and in portion of the LIS interface, and update any data manipulation that was done within the interface engine.

4. Test the LIS Interface

Perform end-to-end testing to ensure that any changes made to data in the LIS interface function is as designed and meets MU criteria.

Major Challenges to LIS Interface Implementation and Meeting MU:

Use this table as a guide to address implementation challenges. The solutions proposed are merely options; additional solutions may be necessary, depending on the complexity of the issue.

#	Challenge	Description	Potential Solution
1	Defining which lab test results are positive/negative vs. Other category based/text results (to meet MU Stage 2 Core measure)	• The LIS interface message does not specifically define whether a result is positive/negative; it may just be able to identify the result as category/text. • EHR needs to identify the results that will be positive/negative (based on information included in the message). • Positive/negative is not necessarily indicated the same way in all systems, and for all results that would fall under the positive/negative umbrella for the lab exchange core measure	• Tag the positive/negative lab results • Create a catalog of results of positive/negative type • Define the positive/negative results in a report
2	Multiple labs that do not send data in the same way	• If you are receiving data from multiple labs that send data that are not in a standard HL7 interface message format, a customizable LIS-EHR interface may need to be created/implemented for each lab (**Note:** Certain The Office of the National Coordinator for Health Information Technology (ONC) EHR certification criteria name the HL7 v2.5.1 Lab Result Interface Implementation Guide as a required standard for MU, which is intended to reduce the need to produce a customized LIS-EHR interface for each lab). • Each new interface adds additional costs, both for the interface itself and for the staffing needed during implementation and maintenance.	• Consolidate the number of labs from which you receive results • Work with the interface engine team to see what manipulation can be done in the existing interfaces • If a customer is powerful or persistent enough, they may be able to successfully pressure their lab partners to use HL7 v2.5.1 Lab Result Interface Implementation Guide standards that are outlined for MU Stage 2.
3	LOINC codes not sent over interface	• If the lab system does not send LOINC codes, there are three options.	• Map LOINC codes in the EHR • Map LOINC codes in the interface • Use a third-party vendor to map LOINC codes • If a customer is powerful or persistent enough, they may be able to successfully pressure their lab partners to use LOINC, which is a standard that is outlined for MU Stage 2.

Pros and Cons to LOINC Code Solutions

Some labs, including many reference labs, do not send the LOINC codes with outgoing laboratory results. When LOINC codes are not sent over an interface, there are three potential options to employ. Each of these solutions has pros and cons for implementers to consider.

Note: EHR representatives and the interface engine team need to work closely to ensure that the solution chosen is compatible with the system.

#	Challenge	Description	Potential Solution
1	Map LOINC codes in the EHR	From a user friendly perspective, it may be easier to map within the EHR because of access to mapping and a better understanding of the system	LOINC codes are both procedure and analytic dependent. Each lab may perform the testing differently (i.e., they may use a different "method" to evaluate the specimen); therefore, unless your EHR system can map based on which lab processed the specimen and sent the result, you may not have the proper code.
2	Map LOINC codes in the interface	Within the interface, manipulation can be done to apply the correct code based on the lab that is sending the result.	The analyst who performs mapping may need both interface and laboratory knowledge to know which codes map properly (if that is not known by the lab itself), and to maintain mappings as new codes or updates are made available
3	Use a third-party vendor to map LOINC codes	Initial mapping and maintenance are handled outside of system.	There are additional costs associated with purchasing the service.