

ABSTRACT

Improving quality and interoperability of public health messaging guides: CDC messaging quality framework (MQF)

N Lipskiy¹, G Kesarinath¹, M Pray², and V Nwadiogbu²

¹Office of Surveillance, Epidemiology and Laboratory Science (OSELS), Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA; and ²Northrop Grumman Consultant to CDC, Atlanta, GA, USA
 E-mail: dgz1@cdc.gov

Objective

This document describes the Public Health Information Network (PHIN) efforts on the development of the MQF, a flexible framework of services and utilities designed to assist public health partners with preparing and communicating quality, standard electronic messages.

Introduction

The HL7 messaging standard, version two¹ that was implemented by most vendors and public health agencies did not resolve all systems' interoperability problems. Design and tool implementation for automated machine-testing messages may resolve many of those problems. This task also has critical importance for rapid deployment of electronic public health systems.

Methods

(1) Assessment of messaging structures that support reporting of nationally notifiable conditions, NND² and Public Health Lab Interoperability Project, PHLIP.³ (2) Analysis of best practices on a structural validation of messages. (3) Analysis of CDC MQF⁴ capabilities for conformance testing and support rapid implementation of biosurveillance applications.

Results

Released in March 2010, a web-hosted MQF application (version 1.0) allows several options for loading messages. It contains a message validation tool based on a current messaging standard for a NND case notification,² which is constrained to a Generic case Notification Messaging Guide (MG) and MGs for Varicella and Tuberculosis. Another MQF option allows validating messages against a PHLIP MG for Influenza test reporting.³ At the first step of a message validation process the MQF application provides a structural validation of messages on message, segment, field and

component levels (that is, cardinality of segments groups, existence of required segments and their cardinality, existence and cardinality of segments and so on). The MQF then provides a message-constrained validation against messaging specifications (that is, validation of data types within OBX segments, lengths of specific data elements, verification that data elements are consist of only supported values and so on). The offline version adds a capability for synchronizing MQF with all NND MGs.

Conclusions

Even at the initial stage of development, the CDC MQF represents a flexible framework of services available to systems and public health partners inside and outside of CDC to prepare, test, and validate electronic messages against the relevant messaging, vocabulary standards, and program specific business rules.

Acknowledgements

This paper was presented as a poster at the 2010 International Society for Disease Surveillance Conference, held in Park City, UT, USA, on 1–2 December 2010.

References

- 1 Health Level Seven, Inc. *HL7 Messaging Standard Version 2.5: An Application Protocol for Data Exchange in Healthcare Environments*. Ann Arbor, MI, 2007.
- 2 PHIN HL7 Version 2.5. Messaging Standard National Condition Reporting Case Notification. ORU^R01 Message Structure Specification/Profile Version 2.0, October 23, 2008. Available at: <http://www.cdc.gov/phn/library/documents/pdf/PHIN%20Notification-MessageSpecificationProfile%20v2%200.pdf>.
- 3 APHL/CDC PHLIP Messaging Guide for Influenza Test Result Reporting by Public Health Laboratories, ORU R01 HL7 v2.3.1, Document version 1.0.2, Sept. 15, 2009. Available at: https://phinmqf.cdc.gov/HL7v2_3_1_APHL_Influenza_Msg_Guide_ORU_v1%20%202.pdf.
- 4 PHIN Message quality Framework. Available at: <https://phinmqf.cdc.gov/>.