Understanding an HL7 Implementation Guide

A Primer on IT Nerd-dom for Newborn Screening Nerds
NBS HL7 Guides

NDBS Orders 10/2011

NDBS Results 11/2011

Lab Results Interface (LRI) 12/2016

Lab Orders Interface (LOI) 05/2017

2010 2011 2016 2017
NBS HL7 Guides

Expert!!!

Riki Merrick, MPH
HL7 Expert
What exactly is this HL7 stuff again?

HL7 = Healthcare Esperanto
Will an Implementation Guide tell me everything I need to start exchanging HL7 messages?
HL7 Project

• Hardware and Software Solution
• Laboratory Workflows
• HL7 Message Specifications
• Technical and Security Documentation
• Test Plans and Testing
• Partner Recruiting
• More Testing
• Maintenance
Building Blocks Toolkit

- Hardware and Software Solution
- Laboratory Workflows
- HL7 Message Specifications
- Technical and Security Documentation
- Test Plans and Testing
- Partner Recruiting
- More Testing
- Maintenance

Willie Andrews, BSMT
Evil Genius

Joshua Miller, MPH
Evil Genius
Building Blocks Toolkit

- Hardware and Software Solution
- Laboratory Workflows
- HL7 Message Specifications
- Technical and Security Documentation
- Test Plans and Testing
- Partner Recruiting
- More Testing
- Maintenance

Willie Andrews, BSMT
Evil Genius

Joshua Miller, MPH
Evil Genius

MICHAEL CONSULTING

NewSTEPs
What will the LOI and LRI Implementation Guides tell me?
HL7 Message Specifications

MSH|^~\&|NBS|DSHS TEST UAT FACILITY^05723062^|||20170719152202||OML^O21^OML_O21|2F719C80-9372-4D26-A7AF-8280D34C0072|P|2.5.1|
PID|1|5858045|M111114^DSHS TEST UAT FACILITY&05723062&^MR|Black^Sirius|20170701120300|M|1002-5^American Indian^HL70005^American Indian|19760514^1234567890&|||
NK1|1|Black^Walburga|MTH|12 Grimmauld Place^^CEDAR PARK^TX^78613^|^^PH^402^4955652|||
OBX|1|ST|57716-3^State printed on filter paper card [Identifier] in NBS card^LN|1|TX||O
OBX|2|ST|57723-9^Unique bar code number of Current sample^LN||169105199||F||20170719152202
OBX|3|CE|57721-3^Reason for lab test in Dried blood spot^LN|1234567890&|||
OBX|4|ST|57711-4^Unique bar code number of Initial sample^LN|160105174||F||20170719152202|
What are the basics of an HL7 message?
HL7 defines this stuff. Why do we need LOI / LRI?
Why do we need guides?
Why do we need guides?

Optionality  No Optionality

DG1 Diagnosis
ERR Error
GT1 Guarantor
IN1 Insurance
MSA Message Acknowledgment
MSH Message Header
NK1 Next of Kin / Associated Parties
NTE Notes and Comments
OBR Observation Request
OBX Observation/Result
ORC Common Order
PID Patient Identification
PV1 Patient Visit
SPM Specimen
TQ1 Timing/Quantity

DG1 Diagnosis
ERR Error
MSA Message Acknowledgment
MSH Message Header
NK1 Next of Kin / Associated Parties
OBR Observation Request
OBX Observation/Result
ORC Common Order
PID Patient Identification
SPM Specimen

State Guide

LOI NDBS

ODT Diet Tray Instructions

HL7
Constraining the Standard

- HL7 2.5.1
- LOI and LRI
- NDBS Component
- State Guide

Open

Constrained
Data Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Examples / Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usage</td>
<td>R - Required</td>
</tr>
<tr>
<td></td>
<td>RE - Required but can be Empty</td>
</tr>
<tr>
<td></td>
<td>O - Optional</td>
</tr>
<tr>
<td></td>
<td>C - Conditional</td>
</tr>
<tr>
<td>Data Type</td>
<td>Numeric</td>
</tr>
<tr>
<td></td>
<td>Alphanumeric</td>
</tr>
<tr>
<td></td>
<td>Standard Code</td>
</tr>
<tr>
<td>Cardinality</td>
<td># of allowable repeats of the element</td>
</tr>
<tr>
<td>Value Set</td>
<td>HL7</td>
</tr>
<tr>
<td></td>
<td>LOINC</td>
</tr>
<tr>
<td></td>
<td>SNOMED</td>
</tr>
</tbody>
</table>
Constraining Usage

- HL7 2.5.1
- LOI and LRI
- NDBS Component
- State Guide

O: Optional
RE: Required but can be Empty
R: Required
C: Conditional

LOI and LRI
NDBS Component
State Guide
HL7 2.5.1

Constraining Usage

<table>
<thead>
<tr>
<th>Standard Level</th>
<th>Collection Date</th>
<th>Analyte Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL7 2.5.1</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>LRI</td>
<td>R</td>
<td>O</td>
</tr>
<tr>
<td>NDBS</td>
<td>R</td>
<td>O</td>
</tr>
<tr>
<td>State</td>
<td>R</td>
<td>R</td>
</tr>
</tbody>
</table>
# Constraining Data Types

<table>
<thead>
<tr>
<th>Standard Level</th>
<th>DOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>HL7 2.5.1</td>
<td>Varies</td>
</tr>
<tr>
<td>LOI</td>
<td>YYYY – R</td>
</tr>
<tr>
<td></td>
<td>MMDD - RE</td>
</tr>
<tr>
<td>NDBS</td>
<td>YYYYMMDD – R</td>
</tr>
<tr>
<td></td>
<td>MMSS - RE</td>
</tr>
<tr>
<td>State</td>
<td>YYYYMMDD – R</td>
</tr>
<tr>
<td></td>
<td>MMSS - R</td>
</tr>
<tr>
<td></td>
<td>+/- ZZZZ - R</td>
</tr>
</tbody>
</table>
Why conform?
Why conform?
Takeaways

• Need an informaticist
• Eliminate differences in data
• Retain program autonomy
• Do it all
Thank you

Brendan Reilly
Brendan.Reilly@dshs.texas.gov