Raising The Bar On HL7 Data Quality

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Agenda

- Background
- Problem
- Proposal
- Approach
- Findings
- Conclusions

Background

- Delaware profile:
  ~900K population, ~1500 providers, ~500 HL7 sites

- State mandated HIE

- Delaware law requires all immunizations to be reported – there is no option to opt out

- Our standard is HL7 2.5.1 using web services

- DHSS registry team is small – 2 full-time staff, with no full-time technical support

Problem (as of mid-2013)

- Too many new providers wanting to onboard HL7
  - Poor EHR HL7 knowledge
  - Poor Web services knowledge
  - Insufficient staff time and lack of technical support for web services
  - Quality of messages from already-onboard providers very spotty
  - Occasional lapses due to EHR system changes
  - Hard to monitor efficiently - reports didn't highlight issues
  - No good way to analyze individual message problems
  - Wanted a way to report back to providers/EHRs regarding their performance

=> Team was overwhelmed and had backlog of approximately 150 providers

Approach

- Engaged HLN consultant to assist with provider/EHR vendor management:
  - Perform outreach to providers and EHR vendors to determine their status for reporting capacity for HL7 messaging
  - Review HL7 messages
  - Provided feedback to the IIS team and EHR's
- Received CDC Interoperability grant to enhance Envision IIS software to add new functionality:
  - Message decomposition and analysis of errors
  - Traffic analysis datamart to understand quality patterns in incoming messages
  - Standalone onboarding portal to collect EHR information and to help them construct a good HL7 message

IIS Enhancements: Message Analysis

Message Analyzer

- Modeled on NIST and other message decomposition/validation tools
- Built directly on DelVAX HL7 parsing engine
  - Better able to identify implementation issues
- Directly integrated with local implementation guide

Message Analyzer - Demo

IIS Enhancements: Traffic Analysis

Traffic Analyzer

- Visualize quality of incoming HL7 messages quickly
- Analyze trends and pinpoint issues
- Provide a consistent scoring system for sending facilities

Traffic Analysis - Demo

IIS Enhancements: Onboarding Portal

Onboarding

- Similar to NIST contextual validation, but built directly on the DelVAX HL7 parsing engine

- Self-service registration and task generation

- Admin can review messages sent and assist if needed

Onboarding - Demo

Findings

- On-boarding is not a one and done function. It's a continuous monitoring of current messages and new practices.

- New rules happen such as HL7 2.7.1. We want to make the process as painless as possible for EHRs and practices.

- The tools we've developed allow us to have a better process.

Conclusions

- Future enhancements will include:
  - Unusual volume alert, increase in errors, or rejections.
  - Provide access to the message analyzer to have EHRs and practices monitor their own data quality during on-boarding and production.
  - Tie our code tables to the on-boarding tool as well as the required data fields to help providers on-board faster
- All of the enhancements that we've made are the result of Federal grant funds. Our challenge is to identify other sources of funds to help with sustainability and additional resources.