





Electronic Diagnostic Audiology Reporting using HL7 Standards

March 11, 2025

Pittsburgh, PA

Learning Objectives



Learning Objective 1:

Participants will be able to describe the development of the HL7 Diagnostic Audiology Reporting standards and how to access it.

Learning Objective 2:

Participants will learn about the process and challenges associated with establishing electronic audiology reporting in Rhode Island.

Learning Objective 3:

Participants will understand the current progress toward electronic reporting from two major hospital audiology clinics.

Development of HL7 Diagnostic Audiology Reporting Standards - Need



- Lost to documentation for diagnostics is challenging for EHDI programs.
- Electronic transfer from EHRs to EHDI Information Systems (EHDI-IS) could:
 - Eliminate duplicative reporting (EHR and EHDI) for audiologists.
 - Improve timeliness of reporting.
 - Improve completeness of reporting.

Development of HL7 Diagnostic Audiology Reporting Standards - Need



- HL7 Standards existed for newborn hearing screening but not for diagnostics.
- EHRs need standards so that they don't have to develop different data transfers for different constituents (like EHDI).

Development of HL7 Diagnostic Audiology Reporting Standards - Process



- National Diagnostic Audiology Reporting Work Group
 - Core Team (CDC EHDI- Xidong Deng, State EHDI – RI and Oregon, PHII – HIT standards Lura Daussat, and HL7 Public Health Work group – Craig Newman)
- Developed interoperability standards to exchange diagnostic audiology data between electronic health record systems and state/territorial EHDI information systems.

Development of HL7 Diagnostic Audiology Reporting Standards - Process



- Submitted draft HL7 Diagnostic Audiology Reporting Implementation Guide to the HL7 Public Health Workgroup
 - Approved as a “Standard for Trial Use”
- Trial period – try the guide and provide feedback to HL7
 - RI EHDI is working on trial
- https://www.hl7.org/implement/standards/product_brief.cfm?product_id=620

Engage Partners



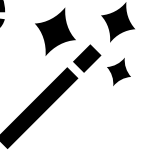
- Talked to potential audiology partners
 - Lifespan
 - Care New England
 - University Otolaryngology
 - Concerns that a future EHR interface could negate all this work and/or they would have to pay for an upgrade/module in EPIC for diagnostic audiology reporting
- Identified and contacted the EHR Partners
 - EPIC
 - Not planning an upgrade/add-on module
 - ModMed



Audiology Clinic #1 – Hospital Based



Care New England

- Requested project through IT governance
 - Took quite a while to get approved and scheduled
- Created a flowsheet in EPIC that modeled the DAR workflow at Care New England
 - Didn't require any new module in EPIC
- Connected the flowsheet to an outbound HL7 interface using existing CloverLeaf software (the magic part) 
- Worked together to agree on a transport method
- Sent a successful test message which allowed RIEHDI to create an inbound HL7 interface

Audiology Clinic #2 – Hospital Based



Lifespan

- Requested project through IT governance in March 2023
 - Still waiting to be scheduled!!!
 - Hospital IT capacity is the biggest challenge



Audiology Clinic #3 – Community Based



University Otolaryngology

- EHR Vendor – ModMed
 - Met with vendor to describe project
 - Expressed interest
 - Preference for FHIR
 - Reviewed several options
 - Currently exploring a FHIR based API

Development of Inbound HL7 Diagnostic Audiology Reporting Interface



- Built parser using “HAPI” Open Source HL7 Parser Software
 - Similar to what we do for immunizations
- Used CDC SOAP standard for Transport and Authentication
 - Already used by partners for immunizations
- Patient Matching
 - Does not require an exact match
 - Similar to what we do for immunizations
- Required fields
 - Patient, Audiologist, Visit Date, Tests Performed, Diagnosis, **Left & Right Degree and Type of Loss**



Sample Message



MSH|^~\&||RI88200710|||20240412142947|186|ORU^R01^ORU_R01|26|T|2.3|||||||
EVN|R01|20230809104508|||186^AUDIOLOGIST^JOHN^J^CNE^134TH
PID|1|E4775^^EPIC^MRN~009201968^^KMRN^KMRN~008411305^^WMRN^WM
RN~100736066^^CMRN^CMRN~9201968^^~8411305^^|E4775^^EPIC^MRN~
009201968^^KMRN^KMRN~008411305^^WMRN^WMRN~100736066^^CMRN^C
MRN~9201968^^~8411305^^|PIPER^PETER||19830122|M||CHINESE|22
PICKLE
LANE^PECKVILLE^PA^45678^USA^P^LAWRENCE|LAWRENCE|(724)567-
1235^P^PH||ENGLISH|MARRIED||666-66-6666||PUERTO RICAN|||||N|||||
PV1|1||^134TH^125931|||||
OBR|1||1616520230809104300|||20230809104300
OBX|1|ST|1^Reason for Visit^OAUD||Failed newborn
screen||||F||20230809104300||186^AUDIOLOGIST^JOHN^J^||
OBX|2|ST|3^Test
Performed^OAUD||ABR||||F||20230809104300||186^AUDIOLOGIST^JOHN^J^||
OBX|3|ST|4^Primary Diagnosis (To be reflective of the primary hearing-related billing
diagnosis)^OAUD||Sensorineural Hearing Loss, Unilateral, Left Ear, Restricted
Hearing Contralateral
H90.A22||||F||20230809104300||186^AUDIOLOGIST^JOHN^J^||

KIDSNET: Diagnostic Audiology



Detailed Audiological Diagnostic Information

Date Tested: **11/23/2022** Audiologist: **CHRISTEN KELLY**

Primary diagnosis: **Sensorineural hearing loss, bilateral (H90.3)**

Diagnosis Left: **SENSORINEURAL** Diagnosis Right: **SENSORINEURAL**

Degree Left: **MODERATE** Degree Right: **MODERATE**

Reason for Visit: **Failed newborn screen**

Risk Factors:

Tests Performed:

Audiological Recommendation/ **Re-evaluation: Specific Date (01/04/2023)**

Referral(s) made:

Amplification:

Hearing Aid (L): **Date started: 11/23/2022 Discontinued date:**

Hearing Aid (R): **Date started: 11/23/2022 Discontinued date:**

Cochlear Implant (L):

Cochlear Implant (R):

Secondary ICD10:

Summary of Challenges



- Final diagnosis type and degree by ear are not a required fields in the HL7 Draft for Trial Use
 - Test messages were not complete (need to establish local guidelines that require type and degree)
- Partners that are not already sending HL7 to RIDOH
 - Hospitals
 - Are sending HL7 Immunization records which we could build on
 - Private Audiology EHRs

Current Status



- Care New England
 - Waiting to re-establish transport
 - Competing with inpatient Cerner to EPIC transition
- Lifespan
 - Waiting for project to be scheduled by IT
 - Competing with name change in parent company
- University Otolaryngology
 - Exploring FHIR API with ModMed

Questions?





Rhode Island EHDI

Ellen Amore, ellen.amore@health.ri.gov

HLN Consulting, LLC

Michael Berry, berrym@hln.com