Newborn Screening – Hearing Test Results

Implementation Guide

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Document History

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Table of Contents

Acronyms and Abbreviations Guide

ACK	HL7 Acknowledgment message
DQA	Data Quality Assurance
DSA	Data Sharing Agreement
DSM	Direct Secure Messaging
EHDI	Early Hearing Detection and Intervention
EHNAC-DTAAP	Electronic Healthcare Network Accreditation Commission – Direct Trusted Agent Accreditation Program
FHIR	Fast Healthcare Interoperability Resources
HIN	Health Information Network
HIPAA	Health Insurance Portability and Accountability Act
HISP	Health Information Systems Program
HL7	Health Level Seven
HPD	Health Provider Directory
IHE	Integrating the Healthcare Enterprise
IPsec	Internet Protocol Security
LLP	Lower Layer Protocol
MCIR	Michigan Care Improvement Registry
MDHHS	Michigan Department of Health and Human Services
MDSS	Michigan Disease Surveillance System

MiHIN	Michigan Health Information Network Shared Services
MSH	Message Header segment
MSSS	Michigan Syndromic Surveillance System
MU	Meaningful Use
MUCA	Master Use Case Agreement
NACK	Negative Acknowledgement
NwHIN	Nationwide Health Information Network
PAE	Pilot Activity Exhibit
PSK	Pre-Shared Key
QO	Qualified Data Sharing Organization
REST	Representational State Transfer
SOAP	Simple Object Access Protocol
TDSO	Trusted Data Sharing Organization
UCA	Use Case Agreement
UCE	Use Case Exhibit
UCS	Use Case Summary
VPN	Virtual Private Network
XCA	Cross Community Access
XDB	XML-to-Database

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Definitions

Acknowledgement (ACK). In data networking, telecommunications, and computer buses, an acknowledgement is a signal that is passed between communicating processes, computers, or devices to signify acknowledgement, or receipt of message, as part of a communications protocol.

Attribution. The connection between a consumer and their health care providers. One definition of attribution is "assigning a provider or providers, who will be held accountable for a member based on an analysis of that member's claim data." The attributed provider is deemed responsible for the patient's cost and quality of care, regardless of which providers actually deliver the service.

Active Care Relationship (ACR). (a) For health providers, a patient who has been seen by a provider within the past 24 months, or is considered part of the health provider's active patient population they are responsible for managing, unless notice of termination of that treatment relationship has been provided to MiHIN; (b) for payers, an eligible member of a health plan;(c) an active relationship between a patient and a health provider for the purpose of treatment, payment and/or healthcare operations consistent with the requirements set forth in HIPAA; (d) a relationship with a health provider asserted by a consumer and approved by the health provider; or (e) any person or TDSO authorized to receive message content under an exhibit which specifies that an ACR may be generated by sending or receiving message content under that exhibit. ACR records are stored by MiHIN in the ACRS.

Active Care Relationship Service® (ACRS®). The MiHIN infrastructure service that contains records for those TDSOs, their participating organizations participants or any health providers who have an active care relationship with a patient.

Applicable Laws and Standards. In addition to the definition set forth in the Data Sharing Agreement, the federal Confidentiality of Alcohol and Drug Abuse Patient Records statute, section 543 of the Public Health Service Act, 42 U.S.C. 290dd-2, and its implementing regulation, 42 CFR Part 2; the Michigan Mental Health Code, at MCLA §§ 333.1748 and 333.1748a; and the Michigan Public Health Code, at MCL § 333.5131, 5114a.

Common Gateway. The method by which data is sent and received by MiHIN using various national standard protocols (e.g. NwHIN SOAP, IHE, XCA, IHE XDS.b).

Conforming Message. A message that is in a standard format that strictly adheres to the implementation guide for its applicable use case.

Data Sharing Agreement. Any data sharing organization agreement signed by both MiHIN and a participating organization. Data sharing organization agreements include but are not limited to: Qualified Data Sharing Organization Agreement, Virtual Qualified Data Sharing Organization Agreement, Consumer Qualified Data Sharing Agreement, Sponsored Shared Organization Agreement, State Sponsored Sharing Organization Agreement, Direct Data Sharing Organization Agreement, Simple Data Sharing

Organization Agreement, or other data sharing organization agreements developed by MiHIN.

Electronic Address. A string that identifies the transport protocol and end point address for communicating electronically with a recipient. A recipient may be a person, organization or other entity that has designated the electronic address as the point at which it will receive electronic messages. Examples of an electronic address include a secure email address (Direct via secure SMTP) or secure URL (SOAP / XDR / REST / FHIR). Communication with an electronic address may require a digital certificate or participation in a trust bundle.

Electronic Medical Record or Electronic Health Record (EMR/EHR). A digital version of a patient's paper medical chart.

Electronic Service Information (ESI). All information reasonably necessary to define an electronic destination's ability to receive and use a specific type of information (e.g, discharge summary, patient summary, laboratory report, query for patient/provider/healthcare data). ESI may include the type of information (e.g. patient summary or query), the destination's electronic address, the messaging framework supported (e.g., SMTP, HTTP/SOAP, XDR, REST, FHIR), security information supported or required (e.g., digital certificate) and specific payload definitions (e.g., CCD C32 V2.5). In addition, ESI may include labels that help identify the type of recipient (e.g., medical records department).

Exhibit/Pilot Activity Exhibit (PAE). Collectively, a use case exhibit or a pilot activity exhibit.

Health Directory. The statewide shared service established by MiHIN that contains contact information on health providers, electronic addresses, end points, and ESI, as a resource for authorized users to obtain contact information and to securely exchange health information.

Health Level 7 (HL7). An interface standard and specifications for clinical and administrative healthcare data developed by the Health Level Seven organization and approved by the American National Standards Institute (ANSI). HL7 provides a method for disparate systems to communicate clinical and administrative information in a normalized format with acknowledgement of receipt

Health Information. Any information, including genetic information, whether oral or recorded in any form or medium, that (a) is created or received by a health provider, public health authority, employer, life insurer, school or university, or healthcare clearinghouse; and (b) relates to the past, present, or future physical or mental health or condition of an individual; the provision of health care to an individual; or the past, present, or future payment for the provision of health care to an individual.

Health Information Network (HIN). An organization or group of organizations responsible for coordinating the exchange of protected health information (PHI) in a region, state, or nationally.

Health Plan. An individual or group plan that provides or pays the cost of medical care (as "group health plan" and "medical care" are defined in section 2791(a)(2) of the Public Health Service Act, 42 U.S.C. 300gg-91(a)(2)). Health plan further includes those entities defined as a health plan under HIPAA, 45 C.F.R 160.103.

Health Professional means (a) any individual licensed, registered, or certified under applicable Federal or State laws or regulations to provide healthcare services; (b) any person holding a nonclinical position within or associated with an organization that provides or coordinates healthcare or healthcare related services; and (c) people who contribute to the gathering, recording, processing, analysis or communication of health information. Examples include, but are not limited to, physicians, physician assistants, nurse practitioners, nurses, medical assistants, home health professionals, administrative assistants, care managers, care coordinators, receptionists and clerks.

Health Provider means facilities/hospitals, health professionals, health plans, caregivers, pharmacists/other qualified professionals, or any other person or organization involved in providing healthcare.

Information Source. Any organization that provides information that is added to a MiHIN infrastructure service.

Master Use Case Agreement (MUCA). Legal document covering expected rules of engagement across all use cases. Trusted data sharing organizations sign master use case agreement one time, then sign use case exhibits for participation in specific use cases.

Message. A mechanism for exchanging message content between the participating organization to MiHIN services, including query and retrieve.

Message Content. Information, as further defined in an Exhibit, which is sent, received, found or used by a participating organization to or from MiHIN services. Message content includes the message content header.

Message Header ("MSH") or Message Content Header. The MSH segment present in every HL7 message type that defines the Message's source, purpose, destination, and certain syntax specifics such as delimiters (separator characters) and character sets. It is always the first segment in the HL7 message, with the only exception being HL7 batch messages.

Michigan Health Information Network Shared Services. The MiHIN for the State of Michigan.

MiHIN Infrastructure Service. Certain services that are shared by numerous use cases. MiHIN infrastructure services include, but are not limited to, Active Care Relationship Service (ACRS), Health Directory, Statewide Consumer Directory (SCD), and the Medical Information DIrect GATEway (MIDIGATE®).

MiHIN Services. The MiHIN infrastructure services and additional services and functionality provided by MiHIN allowing the participating organizations to send, receive, find, or use information to or from MiHIN as further set forth in an exhibit.

Nationwide Health Information Network (NwHIN). See the definition for Sequoia Project.

Negative Acknowledgment (NAK or NACK). "Not acknowledged" and is used to negatively acknowledge or to reject previously received message content or to indicate some kind of error.

Notice. A message transmission that is not message content and which may include an acknowledgement of receipt or error response, such as an ACK or NACK.

Patient Data. Any data about a patient or a consumer that is electronically filed in a participating organization or participating organization participant's systems or repositories. The data may contain protected health information (PHI), personal credit information (PCI), and/or personally identifiable information (PII).

Person Record. Any record in a MiHIN infrastructure service that primarily relates to a person.

Pilot Activity. The activities set forth in the applicable exhibit and typically includes sharing message content through early trials of a new use case that is still being defined and is still under development and which may include participating organization feedback to MiHIN to assist in finalizing a use case and use case and use case exhibit upon conclusion of the pilot activity.

Promoting Interoperability. Using certified EHR technology to improve quality, safety and efficiency of healthcare, and to reduce health disparities as further contemplated by title XIII of the American Recovery and Reinvestment Act of 2009.

Provider Community. A healthcare provider with an active care relationship with the applicable patient.

Send / Receive / Find / Use (SRFU). Means sending, receiving, finding, or using message content. Sending involves the transport of message content. Receiving involves accepting and possibly consuming or storing message content. Finding means querying to locate message content. Using means any use of the message content other than sending, receiving and finding. Examples of use include consuming into workflow, reporting, storing, or analysis. Send/Receive/Find/Use (SRFU) activities must comply with Applicable Laws & Standards or State Administrative Code as that term is defined in this agreement and the data sharing agreement.

Service Interruption. A party is unable to send, receive or find message content for any reason, including the failure of network equipment or software, scheduled or unscheduled maintenance, general Internet outages, and events of force majeure.

SOAP. SOAP originally defined as Simple Object Access Protocol is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. It uses XML technologies to define an extensible messaging framework providing a message construct that can be exchanged over a variety of underlying protocols. The framework has been designed to be independent of any particular programming model and other implementation specific semantics. For the eHealth

Exchange to be a truly scalable, secure and interoperable network, a common transport layer is essential. The messaging platform is based on SOAP 1.2 messages over HTTP.

Source System. A computer system, such as an electronic health record system, at the participating organization, that sends, receives, finds or uses message content or notices.

Statewide Consumer Directory (SCD). A MiHIN infrastructure service that helps organizations provide tools to consumers, which allow the consumers to manage how their personal Health Information can be shared and used. The Statewide Consumer Directory is essentially a Software Development Kit (SDK) with a robust set of APIs that can be used by consumer-facing applications that enable consumers to take an active role in viewing and editing their preferences for how their health information is shared.

Transitions of Care. The movement of a patient from one setting of care (e.g. hospital, ambulatory primary care practice, ambulatory specialty care practice, long-term care, rehabilitation facility) to another setting of care and can include transfers within a healthcare organization.

Trusted Data Sharing Organization (TDSO). An organization that has signed any form of agreement with MiHIN for data sharing.

Use Case. (a) A use case agreement previously executed by a participating organization; or (b) the use case summary, use case exhibit and a use case implementation guide that participating organization or TDSO must follow to share specific message content with the MiHIN.

Use Case Exhibit (UCE). The legal agreement attached as an exhibit to the master use case agreement that governs participation in any specific use case.

Use Case Implementation Guide (UCIG). The document providing technical specifications related to message content and transport of message content between participating organization, MiHIN, and other TDSOs. use case implementation guides are made available via URLs in exhibits.

Use Case Summary. The document providing the executive summary, business justification and value proposition of a use case. Use case summaries are provided by MiHIN upon request and via the MiHIN website at www.mihin.org.

View Download Transmit (VDT). A requirement for Meaningful Use with the objective to provide patients with the ability to view online, download and transmit their health information within a certain period of the information being available to an eligible professional.

Cross-Community Access (XCA).. The IHE (Integrating the Healthcare Enterprise®) standard for Cross-Community Access which provides specifications to query and retrieve patient relevant health information held by other communities.

XML-to-Database (XDB). The XDB algorithm takes XML based EHR document as input and maps its contents to target relational database attributes.

1. Introduction

1.1 Purpose of Use Case

> *Enables electronic messages that contain newborn hearing test results to be sent from hospital electronic health records (EHRs) to MDHHS using Health Level 7 (HL7) messages that are routed through MiHIN.*

Early detection of hearing loss in babies and subsequent intervention is key to treatment and improving quality of life for the child.

The newborn screening mandate in Michigan Public Health code section 333.5431 requires hospitals to screen newborn babies for hearing loss and report hearing test and screening results to the Early Hearing Detection & Intervention (EHDI) program at the Michigan Department of Health and Human Services (MDHHS).

This use case pertains to the transmission of newborn hearing test results from maternity facilities to EHDI. These transmissions assist with the agency's goal of improving beneficiary patient health and reducing a patient's healthcare costs through early detection.

Currently, hearing test and screening results are entered into a hospital's EHR systems, and most Michigan hospitals have already established their connection to the Health Information Network (HIN).

With a large percentage of the births in Michigan covered by Medicaid, the receipt of newborn hearing test and screening results in near real-time from the state's birthing hospitals is an essential public health function. This use case allows that to occur.

In addition, it eliminates the previously used paper forms. This reduces the risk of error and streamlines the reporting workflow which lowers the burden on hospital staff. MDHHS also benefits from more timely and complete reporting.

1.2 Message Content

For this use case, Message Content refers to a message conforming to HL7 2.x standards identified as an ORU message type.

1.3 Data Flow and Actors

In this use case, MiHIN brokers the transport of messages to and from trusted data sharing organizations (TDSOs), called "participating organizations" in the diagram below.
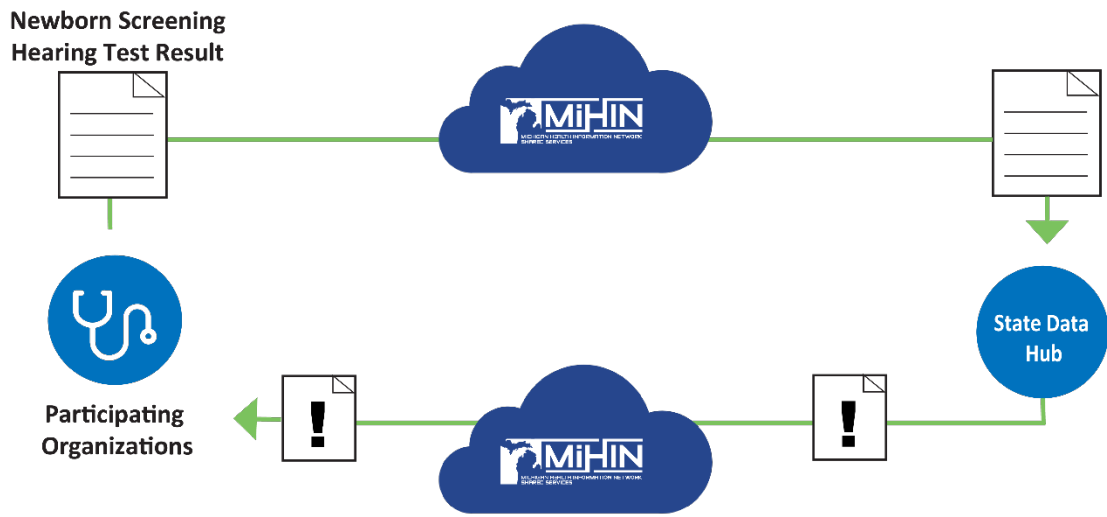
Figure 1. Workflow Between Participating Organization, MiHIN, and State Data Hub

2 Standard Overview

2.1 Message Format

MiHIN supports HL7 2.x messaging standards. For submitting public health reporting messages to State of Michigan registries (like the Michigan Cancer Registry, Michigan Care Improvement Registry, Michigan Disease Surveillance System, and the Michigan Syndromic Surveillance System) HL7 v2.5.1 is preferred, however v2.3.1 is allowable.

2.2 Content

MiHIN is content-agnostic and does not validate content for this use case beyond the message header. To enter fully into production however, messages must conform to the EHDI registry's implementation guide as well. A link to the EHDI registry's implementation guide is found in Appendix A.

Please also see Appendix B for message header formatting requirements and Appendix C and D for examples of a properly formatted message.

3 Onboarding Process

3.1 Initial Onboarding

For organizations to share data with MiHIN under this use case, the organization undergoes two onboarding processes. The two onboarding processes are legal onboarding and technical connectivity onboarding. To initiate these two onboarding processes, notify MiHIN via http://mihin.org/requesthelp/.

3.1.1 Initial Legal Process

The first time an organization undergoes the legal onboarding process with MiHIN, the organization negotiates and enters into a master organization agreement and master use case agreement which then allows the organization to enter into one or more use cases via use case exhibits.

Once an organization has entered into a master organization agreement, the organization can enter into an unlimited number of use cases with MiHIN. All of MiHIN's use cases are available at:

http://mihin.org/about-mihin/resources/

3.1.2 Initial Technical Connectivity Process

MiHIN considers itself "transport agnostic" and offers multiple options for organizations to establish technical connectivity to transport data to MiHIN. Organizations should select one or more connectivity methods for message transport based on their technical capabilities, and put in a service request at www.mihin.org/requesthelp. Currently MiHIN accepts the following transport methods:

- LLP over IPsec VPN – Lower-Layer Protocol over Internet Protocol Security Virtual Private Network
- DSM – Direct Secure Messaging

For VPN connectivity two VPNs are required. A primary VPN will facilitate regular traffic. A secondary will be established for fail-over purposes.

Additional transport methods may be added in the future. These can include NwHIN, XCA, REST/RESTFUL APIs, FHIR, and others.

The following steps describe the technical onboarding process. However, MiHIN typically conducts "onboarding kickoff" meetings with new organizations to go through each of these steps in detail and answer any questions.

1. The organization selects one supported transport method and establishes connectivity with MiHIN. This step varies based on the method selected:
   a. **LLP over IPsec VPN** – MiHIN's site-to-site VPN request form must be completed, sent and approved by MiHIN. Send a request via www.mihin.org/requesthelp to obtain the VPN request form. A pre-shared key is then exchanged between the

organization and MiHIN to initialize the connection. The LLP over IPsec VPN is the most efficient transport for very high volumes of messages.
   b. **Direct Secure Messaging** – MiHIN accepts Direct Secure Messages from Health Internet Service Provider (HISPs) that have EHNAC-DTAAP (DirectTrust) accreditation. Test messages are sent to verify HISP connectivity ("ping pong"). The Message Header section in the test messages is verified for appropriate routing configuration.
2. Test messages are sent by the organization to MiHIN.
   a. All test messages must have a "T" in the Message Header – field 11
   b. Test traffic is routed via MiHIN to the appropriate destination. For this use case, the destination is the MDHHS Data Hub.
   c. The end destination monitors for inbound test traffic and confirm receipt with MiHIN, which confirms with the organization.
3. For this use case, MDHHS deems the sending facility to have entered into Data Quality Assurance Status (DQA) once they have successfully received a properly formatted message from the sending facility via the participating organization through MiHIN.
   a. Until completion of the DQA process, sending facilities should continue to dually send their Newborn Screening Hearing Test Results through MiHIN as well as continuing to send using any current method.
4. MDHHS declares the sending facility to be at production status when enough messages have been verified that the registry is satisfied. This may be done one facility at a time or in groups of shared EHR systems.
   a. At this time, the sending facility may then send production messages through the participating organization to MiHIN. The sending facility now places a "P" (for production) value in the MSH-11 instead of the "T" used during testing.
   b. Accreditation. Test messages are sent to verify HISP connectivity ("ping pong"). The Message Header section in the test messages is verified for appropriate routing configuration.
5. Test messages are sent by the participating organization to MiHIN.
   a. All test messages must have a "T" in the Message Header – field 11
   b. Test traffic is routed via MiHIN to the appropriate destination. For this use case, the destination is the MDHHS Data Hub.
   c. The end destination monitors for inbound test traffic and confirm receipt with MiHIN, which confirms with the participating organization.
6. For this use case, MDHHS deems the sending facility to have entered into Data Quality Assurance Status (DQA) once they have successfully received a properly formatted message from the sending facility via the participating organization through MiHIN.
   a. Until completion of the DQA process, sending facilities should continue to dually send their Newborn Screening Hearing Test Results through MiHIN as well as continuing to send using any current method.
7. MDHHS declares the sending facility to be at production status when enough messages have been verified that the registry is satisfied. This may be done one facility at a time or in groups of shared EHR systems.
   a. At this time, the sending facility may then send production messages through the participating organization to MiHIN. The sending facility now places a "P" (for production) value in the MSH-11 instead of the "T" used during testing.

3.2 Onboarding Additional Sending Facilities

When a participating organization wishes to onboard additional sending facilities, those facilities must first be approved by the EHDI registry. Once successful, the registration information from the program, including the Facility OID Number, must be emailed to www.mihin.org/requesthelp. The new sending facility should then begin sending test messages to the EHDI registry in the same fashion as the initial facility as detailed in section 3.1.2, making sure that to place a "T" value in MSH-11. The MDHHS deems the sending facility to be in DQA and eventually Production Status.

For specific information regarding testing with, refer to the MDHHS EHDI Implementation Guide: https://mihin.org/wp-content/uploads/2019/03/MiHIN-UCIG-Newborn-Hearing-v15-03-29-19.pdf

4 Troubleshooting

4.1 Production Support

	Severity Levels			
	1	*2*	*3*	*4*
Description	***Critical Impact/ System Down:*** Business critical software is down or critical interface has failed. The issue is impacting all production systems, causing all participating organizations' or other organizations' ability to function to be unusable.	***Significant Business Impact:*** Software component severely restricted. Entire organization is unable to continue business functions, causing all communications and transfer of messages to be halted.	**Partial Failure or Downtime:** Program is useable and less significant features unavailable. The service is online, though may not working as intended or may not currently working as intended or may not currently be accessible, though other systems are currently available.	**Minimal Business:** A non-critical software component is malfunctioning, causing minimal impact, or a test system is down.
Example	All messages to and from MiHIN are unable to be sent and received, let alone tracked	MiHIN cannot communication (send or receive) messages between single or multiple participating organizations but can still successfully communicate with other organizations.	Messages are lost in transit; messages can be received but not sent.	Additional feature requested.
Primary Initiation Method	***Phone:*** (517) 336-1430	***Phone:*** (517) 336-1430	Web form at http://mihin.org/ requesthelp	Web form at http://mihin.org/ requesthelp
Secondary Initiation Method	Web form at http://mihin.org/ requesthelp	Web form at http://mihin.org/ requesthelp	Email to help@mihin.org	Email to help@mihin.org
Tertiary Initiation Method	Email to help@mihin.org	Email to help@mihin.org	N/A	N/A
Initial Response	Within 2 hours	Within 2 hours	1 business day	1 business day
Resolution Goal	24 hours	24 hours	3 business days	7 business days

A list of common questions regarding the Newborn Screening – Hearing Test Results Use Case can be found at:

https://mihin.org/newborn-screening-hearing-test-results-use-case/

If you have questions, please contact the MiHIN Help Desk:

- www.mihin.org/requesthelp
- Phone: (517) 336-1430
- Monday – Friday 8:00 AM – 5:00 PM (Eastern)

5 Legal Advisory Language

This reminder applies to all use cases covering the exchange of electronic health information:

The Data Sharing Agreement (DSA) establishes the legal framework under which participating organizations can exchange messages through the MiHIN Platform, and sets forth the following approved reasons for which messages may be exchanged:

a. By health care providers for Treatment, Payment and/or Health Care Operations consistent with the requirements set forth in HIPAA
b. Public health activities and reporting as permitted by HIPAA and other Applicable Laws and Standards
c. To facilitate the implementation of "Meaningful Use" criteria as specified in the American Recovery and Reinvestment Act of 2009 and as permitted by HIPAA
d. Uses and disclosures pursuant to an Authorization provided by the individual who is the subject of the Message or such individual's personal representative in accordance with HIPAA
e. By Data Sharing Organizations for any and all purposes, including but not limited to pilot programs and testing, provided that such purposes are consistent with Applicable Laws and Standards
f. For any additional purposes as specified in any use case, provided that such purposes are consistent with Applicable Laws and Standards

Under the DSA, "***Applicable Laws and Standards***" means all applicable federal, state, and local laws, statutes, acts, ordinances, rules, codes, standards, regulations and judicial or administrative decisions promulgated by any governmental or self-regulatory agency, including the State of Michigan, the Michigan Health Information Technology Commission, or the Michigan Health and Hospital Association, as any of the foregoing may be amended, modified, codified, reenacted, promulgated or published, in whole or in part, and in effect from time to time. "Applicable Laws and Standards" includes but is not limited to HIPAA; the federal Confidentiality of Alcohol and Drug Abuse Patient Records statute, section 543 of the Public Health Service Act, 42 U.S.C. 290dd-2, and its implementing regulation, 42 CFR Part 2; the Michigan Mental Health Code, at MCLA §§ 333.1748 and 333.1748a; and the Michigan Public Health Code, at MCL § 333.5131, 5114a.

It is each participating organization's obligation and responsibility to ensure that it is aware of Applicable Laws and Standards as they pertain to the content of each message sent, and that its delivery of each message complies with the Applicable Laws and Standards. This means, for example, that if a use case is directed to the exchange of physical health information that may be exchanged without patient authorization under HIPAA, the participating organization must not deliver any message containing health information for which an express patient authorization or consent is required (e.g., mental or behavioral health information).

Disclaimer: The information contained in this implementation guide was current as of the date of the latest revision in the Document History in this guide. However, Medicare and

Medicaid policies are subject to change and do so frequently. HL7 versions and formatting are also subject to updates. Therefore, links to any source documents have been provided within this guide for reference. MiHIN applies its best efforts to keep all information in this guide up-to-date. It is ultimately the responsibility of the participating organization and sending facilities to be knowledgeable of changes outside of MiHIN's control.

Appendix A

A.1 Referenced Specifications

EHDI HL7 Messaging Implementation Guide:

https://mihin.org/wp-content/uploads/2019/03/MiHIN-UCIG-Newborn-Hearing-v15-03-29-19.pdf

Michigan Public Health Institute Newborn Screening:

https://mihin.org/newborn-screening-hearing-test-results-use-case/

Appendix B

B.1 Key Message Elements

B.1.1 Message Header

The definitions in the table below will be conformed to by all HL7 messages communicating the message header segment.

Sequence	Length	DT	Usage	Cardinality	TBL#	Item #	Element Name	Comments
1	1	ST	R	1..1		00001	Field Separator	
2	4	ST	R	1..1		00002	Encoding Characters	
3	180	HD	R	1..1	0361	00003	Sending Application	
4	180	HD	R	1..1	0362	00004	Sending Facility	Facility OID
5	180	HD	R	1..1	0361	00005	Receiving Application	EHDI^2.16.840.1.114222.4.3.2.2.3.161.1.3434^ISO
6	180	HD	R	1..1	0362	00006	Receiving Facility	MDCH^2.16.840.1.114222.4.3.2.2.3.161.1^ISO
7	26	TS	R	1..1		00007	Date/Time of Message	
8	40	ST	X	0..0		00008	Security	
9	7	CM	R	1..1	0076 0003	00009	Message Type	ORU^R01^ORU_R01
10	20	ST	R	1..1		00010	Message Control ID	Should be repopulated (rather than pass-through) for outbound message header
11	3	PT	R	1..1		00011	Processing ID	**P** when in production, **T** for testing
12	60	VID	R	1..1	0104	00012	Version ID	
13	15	NM	X	0..0		00013	Sequence Number	
14	180	ST	X	0..0		00014	Continuation Pointer	
15	2	ID	X	0..0	0155	00015	Accept Acknowledgment Type	

Sequence	Length	DT	Usage	Cardinality	TBL#	Item #	Element Name	Comments
16	2	ID	X	0..0	0155	00016	Application Acknowledgment Type	
17	2	ID	X	0..0		00017	Country Code	
18	16	ID	X	0..0		00692	Character Set	
19	60	CE	X	0..0			Principal Language of Message	
20	20	ID	X	0..0		00356	Alternate Character Set Handling Scheme	

B.1.2 All Remaining Segments

The message header is the only segment that HIN requires to be formatted in a certain way. Please follow the registry specified standards for all remaining segment and field definitions. These standards can be found in the EHDI Implementation Guide available at:

www.mihin.org/newborn-screening-hearing/ucig/

Appendix C

C.1 EHDI Quick Reference Sheet

Color Key:

- ■ Will always be sent
- ■ Will be sent if information is available
- ■ Will be sent conditionally
- ■ Optional
- ■ Will be ignored

```
    1  2  3  4      5  6  7

MSH|^~\&|Sending Application | Sending Facility| Receiving Application| Receiving Facility| Date/Time of
Message

 8  9     10                      11                      12      13 14 15 16

|  |Message Type| Message Control ID| Processing ID (T for test and P for production)| HL7 Version ID |  |  |  |
|

        17      18        19

Country Code|   |Principal Language|
```

Appendix D

D.1 Sample Message

D.1.1 MSH

MSH|^~\&|EHDI Screening
Device^2.16.840.1.113883.4.3.48^OID|SendingFacility^2.16.840.1.113883.4.3.47^OID|
EHDI^2.16.840.1.114222.4.3.2.2.3.161.1.3434^ISO|MDCH^2.16.840.1.114222.4.3.2.2.3.161
.1^ISO|20120701132554-0400||ORU^R01^ORU_R01|2012070113255400-
0500|T|2.5.1|||AL|AL|USA||en^English^ISO639-1

PID|1||1||FRANKLIN^TRICIA^L||19860122|F|||770 SE PECAN
STREET^^PONTIAC^MI^48341||839-555-9557|118-555-5271|||||000-00-1103|

PV1||I|427695007|||||1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

NK1|1|Jones^Mary^James|MTH^Mother^HL70063|201
Street^^Lansing^MI^48917^USA|^PRN^PH^^011^555^555-5555

OBR|1|123456^
HOSPITAL^9999999999^NPI|123456^HOSPITAL^9999999999^NPI|54111-0^Newborn
hearing loss panel^LN|||201201311234-
0600|||^Screener^Annie^S|||||^Smith^John^S^^Dr.|^PRN^PH^^011^555^5551234^333|
|||||20120131123400-0500|||F|||^Parent^Mama

OBX|1|TX|57700-7^Hearing loss newborn screening comment/discussion^LN|1|baby
sleeping|||||||F|||20120131123400-0500||||Maico-EroScan|20120131123400-
0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPIb

OBX|2|CE|58232-0^Hearing loss risk indicators^LN|1|266700009^Assisted breathing
procedure^SCT|||A|||F|||201201311234-0600||||Maico-EroScan|20120131123400-
0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|3|CE|58232-0^Hearing loss risk indicators^LN|2|LA12669-0^ICU stay > 5
days^LN|||A|||F|||201201311234-0500||||Maico-EroScan|20120131123400-
0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|4|CE|58232-0^Hearing loss risk indicators^LN|3|LA12667-4^Caregiver concern
about
hearing^LN|||A|||F|||20120131123400-0500||||Maico-EroScan|20120131123400-
0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|5|CE|58232-0^Hearing loss risk indicators^LN|4|439750006^Family history of
hearing Loss (situation)^SCT|||A|||F|||20120131123400-0500||||Maico-

EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|6|CE|58232-0^Hearing loss risk indicators^LN|5|233573008^Extracorporeal
membrane oxygenation (procedure) ^SCT|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|7|CE|58232-0^Hearing loss risk indicators^LN|6|441899004^History of therapy with
ototoxic medication (situation) ^SCT|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|8|CE|58232-0^Hearing loss risk indicators^LN|7|276687002^Conjugated
hyperbilirubinemia in infancy (disorder) ^SCT|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|9|CE|58232-0^Hearing loss risk indicators^LN|8|11618000^Intra-amniotic infection
of fetus^SCT|||A|||F|||20120131123400-0500|||||Maico-EroScan|20120131123400-
0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|10|CE|58232-0^Hearing loss risk indicators^LN|9|268239009^Congenital
abnormality of skull and face bones ^SCT|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|11|CE|58232-0^Hearing loss risk indicators^LN|10|LA12681-5^Physical findings of
syndromes that include hearing loss^LN|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|12|CE|58232-0^Hearing loss risk indicators^LN|11|LA12676-5^Syndromes
associated with hearing loss^LN|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|13|CE|58232-0^Hearing loss risk indicators^LN|12|80690008^Degenerative disease
of the central nervous system (disorder) ^SCT|||A|||F|||20120131123400-0500|||||Maico-
EroScan|20120131123400-0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|14|CE|58232-0^Hearing loss risk indicators^LN|13|178280004^Postnatal infection
(disorder)^SCT|||A|||F|||20120131123400-0500|||||Maico-EroScan|20120131123400-
0500|||||Hospital^^^^^MDCH^^^^|123 South
Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|15|CE|58232-0^Hearing loss risk indicators^LN|14|312972009^Neonatal
extracranial head trauma (disorder)^SCT|||A|||F|||20120131123400-0500|||||Maico-

EroScan|20120131123400- 0500||||Hospital^^^^^MDCH^^^^|123 South Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|16|CE|58232-0^Hearing loss risk indicators^LN|15|161653008^History of – chemotherapy (situation) ^SCT|||A|||F|||20120131123400-0500||||Maico-EroScan|20120131123400-0500||||Hospital^^^^^MDCH^^^^|123 South Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBR|2|123456^HOSPITAL^9999999999^NPI|123456^HOSPITAL^9999999999^NPI|737 44-5^Newborn hearing screen panel of ear - right^LN|||20120131123400-0500|||^Screener^Annie^S||||||^Smith^John^S^^Dr.|^PRN^PH^^011^555^5551234^333| ||||20120131123400-0500|||F|||^Parent^Mama

OBX|1|CE|54109-4^Newborn hearing screen of ear right^LN|1|164059009^Pass^SCT|||N|||F|||20120131123500-0500|||LA10389-7^OAE^LN|Maico-EroScan|20120131123500-0500||||Hospital^^^^^MDCH^^^^|123 South Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|2|NM|73743-7^Duration of screening right ear^LN|1|2|min^minute^UCUM||N|||F|||20120131123500-0500|||LA10389-7^OAE^LN|Maico-EroScan|20120131123500-0500||||Hospital|123 South Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBR|3|123456^ HOSPITAL^9999999999^NPI|123456^HOSPITAL^9999999999^NPI|73741-1^Newborn hearing screen panel of ear - left^LN|||20120131123400-0500|||^Screener^Annie^S||||||^Smith^John^S^^Dr.|^PRN^PH^^011^555^5551234^333| ||||20120131123400-0500|||F|||^Parent^Mama

OBX|1|CE|54108-6^Newborn hearing screen of ear - left^LN|1|183924009^Refer^SCT|||A|||F|||20120131123500-0500|||LA10389-7^OAE^LN|Maico-EroScan|20120131123500-0500||||Hospital^^^^^MDCH^^^^|123 South Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI

OBX|2|NM|73740-3^Duration of screening left ear^LN|1|2|min^minute^UCUM||N|||F|||20120131123500-0500|||LA10389-7^OAE^LN|Maico-EroScan|20120131123500-0500||||Hospital^^^^^MDCH^^^^|123 South Street^^Lansing^MI^48917^USA|1001001^Smith^Theodore^^^Dr^^^OPH^^^^NPI