Electronic Case Reporting

Implementation Guide

Version 26
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Document History

Date	Version	Sections Revised	Description	Modifier
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5/3/23	26	4.4	Updated DSM Endpoint information	M. Allen

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Acronyms and Abbreviations Guide

AA	Assigning Authority
ACRS®	Active Care Relationship Service®
AD	Advance Directive
ADT	Admission, Discharge, Transfer
API	Application Programming Interface
CAH	Critical Access Hospital
CAT 1	Category 1
CAT 3	Category 3
CCD®	Continuity of Care Document
CDA®	Clinical Document Architecture
CDC	Centers for Disease Control and Prevention
CEHRT	Certified Electronic Health Record Technology
CGS	Common Gateway Service
CHAMPS	Community Health Automated Medicaid Processing System
CHDR	Clinical Data Repository/Health Data Repository
CMS	Centers for Medicare & Medicaid Services
CQM	Clinical Quality Measure
CQMRR	Clinical Quality Measurement Reporting and Repository
DQA	Data Quality Assurance
DSM	Direct Secure Messaging
DSO	Data Sharing Organization
eCQM	electronic Clinical Quality Measure

eCR	Electronic Case Reporting
EH	Eligible Hospital
EHR	Electronic Health Record
EHR-MIPP	Electronic Health Record Medicaid Incentive Payment Program
eICR	Electronic Initial Case Report
EP	Eligible Professional
EPID	Enterprise Patient ID
esMD	CMS Electronic Submission of Medical Documentation
FHIR®	Fast Healthcare Interoperability Resources®
HEDIS	Healthcare Effectiveness Data and Information Set
HIE	Health Information Exchange
HIE-QO	Health Information Exchange Qualified Data Sharing Organization
HIN	Health Information Network
HITSP	Health Information Technology Standards Panel
HL7®	Health Level Seven®
HPD	Health Provider Directory
ICBR	Integrated Care Bridge Record
ICD	International Classification of Diseases
ICN	Identification Control Number
ICO	Integrated Care Organization

ICT	Integrated Care Teams
IDN	Integrated Delivery Network
IHE	Integrating the Healthcare Enterprise
JSON	JavaScript Object Notation
LOINC	Logical Observation Identifiers Names and Codes
MDHHS	Michigan Department of Health and Human Services
MIDIGATE®	Medical Information Direct Gateway
MiHIN	Michigan Health Information Network Shared Services
MIP	Merit-Based Incentive Payment System
MPI	Master Person Index
MUCA	Master Use Case Agreement
NHIE	Nationwide Health Information Exchange
NHIO	Nationwide Health Information Organizations
NIST	National Institute of Standards and Technology
NPI	National Provider Identifier
NwHIN	Nationwide Health Information Network
OID	Object Identifier
ONC	Office of the National Coordinator
PD	Patient Discovery
PDQ	Patient Demographic Query
PHA	Public Health Agency
PO	Participating Organization

PoM	Peace of Mind
PQRS	Physician Quality Reporting System
PI	Promoting Interoperability
QD	Query for Documents
QRDA	Quality Reporting Document Architecture
RAS	Registration and Attestation System
RD	Retrieve Documents
REST	Representational State Transfer
RR	Reportability Response
SAML	Security Assertion Markup Language
SNOMED-CT	Systemized Nomenclature of Medicine – Clinical Terms
SOAP	Simple Object Access Protocol
SOM	State of Michigan
SSA	Social Security Administration
SSO	Single Sign On
SSSO	State Sponsored Data Sharing Organization
SCD	Statewide Consumer Directory
TDSO	Trusted Data Sharing Organization
UCA	Use Case Agreement
UCS	Use Case Summary
URL	Uniform Resources Locators
VA	Department of Veterans Affairs
VLER	Virtual Lifetime Electronic Record
VPN	Virtual Private Network
XCA	Cross Community Access

XCPD	Cross-Community Patient Discovery
XDR	Cross-Enterprise Document Reliable Interchange
XDS	Cross-Enterprise Document Sharing
XML	Extensible Markup Language

Definitions

Attribution. The connection between a consumer and their healthcare 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 Michigan Health Information Network Shared Services (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 Health Insurance Portability and Accountability Act (HIPAA); (d) a relationship with a health provider asserted by a consumer and approved by the health provider; or (e) any person or Trusted Data Sharing Organization authorized to receive message content under an exhibit which specifies that an Active Care Relationship (ACR) may be generated by sending or receiving message content under that exhibit. ACR records are stored by MiHIN in the Active Care Relationship Service.

Active Care Relationship Service® (ACRS®). The Michigan Health Information Network Shared Services infrastructure service that contains records for Trusted Data Sharing Organizations, their participating organizations participants or any health providers who have an active care relationship with a patient.

Admission, Discharge, Transfer (ADT). An event that occurs when a patient is admitted to, discharged from, or transferred from one care setting to another care setting or to the patient's home. For example, an Admission, Discharge, Transfer (ADT) event occurs when a patient is discharged from a hospital. An ADT event also occurs when a patient arrives in care setting such as a health clinic or hospital.

ADT Message. A type of Health Level Seven® (HL7®) message generated by healthcare systems based upon Admission, Discharge, Transfer (ADT) events and the HL7 *"Electronic Data Exchange in Healthcare"* standard. The HL7 ADT message type is used

to send and receive patient demographic and healthcare encounter information, generated by source system(s). The ADT messages contain patient demographic, visit, insurance, and diagnosis information.

ADT Notification. An electronic notification that a given patient has undergone an Admission, Discharge, Transfer (ADT) event. An ADT Notification is not a complete ADT Message.

Advance Directive. A document in which consumers specify what type of medical care they want in the future, or who should make medical decisions if they become unable to make decisions for themselves.

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.

C32. Healthcare Information Technology Standards Panel Summary Documents Using Health Level Seven® Continuity of Care Document Component - http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=32.

C62. The Healthcare Information Technology Standards Panel Unstructured Document Component is provided for the capture and storage of patient identifiable, unstructured document content, such as text, PDF, and images rendered in PDF. It is based on the Cross-Enterprise Sharing of Scanned Documents (XDS-SD) profile from Integrating the Healthcare Enterprise - http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=62

C83. The Healthcare Information Technology Standards Panel (HITSP) Clinical Document Architecture (CDA) Content Modules Component. The CDA Content Modules Component defines the content modules for document based HITSP constructs utilizing clinical information- http://www.hitsp.org/ConstructSet_Details.aspx?&PrefixAlpha=4&PrefixNumeric=83

Caregiver. An individual such as a health professional or social worker who assists in the identification, prevention or treatment of an illness or disability.

Clinical Document Architecture (CDA). A message structure that uses XML and is made up of Templates and Profiles with RIM attributes and codes. One of the main advantages to using XML is the human readable structure.

Common Gateway. The method by which data is sent and received by Michigan Health Information Network Shared Services 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.

CONNECT. An open source software solution that supports health information exchange – both locally and at the national level. CONNECT uses Nationwide Health Information Network standards and governance to make sure that health information exchanges are compatible with other exchanges being set up throughout the country (http://www.connectopensource.org/). This software solution was initially developed by federal agencies to support their health-related missions, but it is now available to all organizations and can be used to help set up health information exchanges and share data using nationally-recognized interoperability standards.

Critical Access Hospital (CAH). A Critical Access Hospital as defined under the Medicaid Electronic Health Record Incentive Program.

Data Sharing Agreement. Any data sharing organization agreement signed by both Michigan Health Information Network Shared Services (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.

DS Message. A message specific to the document submission (DS) specification that conforms in content and format to the Integrating the Healthcare Enterprise's Cross-enterprise Document Reliable Interchange specification.

EdgeSim. Simulators that are utilized in a testing environment to simulate testing with a data sharing organization.

eHealth Exchange. See the definition for The Sequoia Project.

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 Simple Mail Transfer Protocol) or secure URL (SOAP/XDR/REST/FHIR). Communication with an electronic address may require a digital certificate or participation in a trust bundle.

Electronic CQM (eCQM). Clinical Quality Measure that are specified in a standard electronic format and are designed to use data from health information technology systems for measurement.

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). Electronic Service Information (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).

Eligible Hospital (EH). An Eligible Hospital as defined under the Medicare and Medicaid Electronic Health Record Incentive Programs.

Eligible Professional (EP). An Eligible Professional as defined under the Medicare and Medicaid Electronic Health Record Incentive Programs.

End Point. An instance of an electronic address or ESI.

Exhibit. Collectively, a use case exhibit or a pilot activity exhibit.

FedSim. Simulators that are utilized in a testing environment to simulate testing with a federal partner e.g., Social Security Administration or U.S. Department of Veterans Affairs.

Health Directory. The statewide shared service established by Michigan Health Information Network Shared Services 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 Seven® (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 healthcare to an individual; or the past, present, or future payment for the provision of healthcare to an individual.

Health Information Network (HIN). An organization or group of organizations responsible for coordinating the exchange of protected health information 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.

ICD-10. Diagnosis codes is the 10th revision of the International Statistical Classification of Diseases and Related Health Problems, a medical classification list by the World Health Organization.

Immunization Information System (IIS). A registry that stores immunization records.

Information Source. Any organization that provides information that is added to a Michigan Health Information Network Shared Services infrastructure service.

Integrating the Healthcare Enterprise. An initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information (http://www.ihe.net/). Integrating the Healthcare Enterprise (IHE) promotes the coordinated use of established standards such as DICOM and Health Level Seven® to address specific clinical needs in support of optimal patient care. Systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively. The Nationwide Health Information Network specifications utilize underlying IHE specifications for various services for health data exchange

LOINC. Logical Observation Identifiers Names and Codes is a database and universal standard for identifying medical laboratory observations.

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 Michigan Health Information Network Shared 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 Michigan Health Information Network Shared Services. Message content includes the message content header.

Message Header ("MSH") or Message Content Header. The Message Header segment present in every Health Level Seven® (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 Care Improvement Registry (MCIR). The Immunization Information System for the State of Michigan operated by the Michigan Department of Health and Human Services.

Michigan Health Information Network Shared Services. The health information network for the State of Michigan.

MiHIN Infrastructure Service. Certain services that are shared by numerous use cases. Michigan Health Information Network Shared Services infrastructure services include, but are not limited to, Active Care Relationship Service®, Health Directory, Statewide Consumer Directory, and the Medical Information Direct Gateway (MIDIGATE®).

MiHIN Services. The Michigan Health Information Network Shared Services (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.

Merit-Based Incentive Payment System. The program that will determine Medicare payment adjustments. Using a composite performance score, eligible clinicians (ECs) may receive a payment bonus, a payment penalty or no payment adjustment.

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

Nationwide Health Information Organizations (NHIO). Nodes on the eHealth Exchange that use the Nationwide Health Information Network web services to facilitate exchange of information with other nodes in the network.

NwHIN Authorization Framework Specification. The purpose of this specification is to define the required exchange of information describing the initiator of a request between Health Information Organizations participating in the eHealth Exchange network. This enables a responding Nationwide Health Information Organizations (NHIO) to evaluate the request based on the initiating NHIOs assertions and its own local policies and permissions.

NwHIN Document Submission (DS) Web Service Interface Specification. The purpose of this specification is to provide the ability to "send" data for a given patient from an exchange partner to a health information exchange using configuration on the sender side.

NwHIN Gateway. An implementation of the Nationwide Health Information Network specified web service interfaces. These web service interfaces communicate over secured Hypertext Transfer Protocol Secure using Public Key Infrastructure supported by the Nationwide Health Information Network Operational Infrastructure.

NwHIN Interface. An implementation of the Nationwide Health Information Network (NwHIN) specified web service interfaces. These web service interfaces communicate over secured Hypertext Transfer Protocol Secure using Public Key Infrastructure supported by the NwHIN Operational Infrastructure.

NwHIN Messaging Platform Specifications. The purpose of this specification is to define a base set of messaging standards and web service protocols which must be implemented by each node in the eHealth Exchange network and applies to all eHealth Exchange transactions.

NwHIN Patient Discovery Web Service Interface Specification. The purpose of this specification is to define the mechanism by which one eHealth Exchange node can query another to reciprocally establish patient identity and to determine if a node may be a source of information for a specific patient.

NwHIN Query for Documents Web Service Interface Specification. The purpose of this specification is to define the mechanism by which an initiating eHealth Exchange node can request a patient-specific list of available documents from a responding node using the patient ID obtained by a prior Patient Discovery transaction.

NwHIN Retrieve Documents Web Service Interface Specification. The purpose of this specification is to define the mechanism by which an Initiating eHealth Exchange node can retrieve specific documents from a responding node using the Document Reference IDs obtained using a prior Query for Documents transaction.

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 Acknowledged or Not Acknowledged.

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, personal credit information, and/or personally identifiable information.

Person Record. Any record in a Michigan Health Information Network Shared Services 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 Michigan Health Information Network Shared Service to assist in finalizing a use case and use case and use case exhibit upon conclusion of the pilot activity.

Promoting Interoperability. Using certified electronic health record 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.

Principal. A person or a system utilizing a federated identity through a federated organization.

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

Public Health Agency. Entities that have the legal authority to receive case reports on conditions of interest to them (Ex. Michigan Department of Health and Human Services).

Query for Documents Message. A message specific to the Query for Documents Web Services Interface Specification that references the Integrating the Healthcare Enterprise's Cross-Community Access specification.

Reportability Response. A message used to communicate the reportability of a case report.

REST. REST stands for Representational State Transfer, which is an architectural style, and an approach to communications that is often used in the development of web services.

Retrieve Documents Message. Retrieve documents web services interface specification that references the Integrating the Healthcare Enterprise's Cross-Community Access specification.

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.

SNOMED – CT. Systemized Nomenclature of Medicine – Clinical Terms is a systematically organized computer processable collection of medical terms providing codes, terms, synonyms and definitions used in clinical documentation and reporting.

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 Hypertext Transfer Protocol.

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.

Specifications. Specifications provide a standard set of service interfaces that enable the exchange of interoperable health information among the health information exchanges.

Statewide Consumer Directory (SCD). A Michigan Health Information Network Shared Services 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 with a robust set of Application Programming Interfaces 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.

Target HIE. The health information exchange or eHealth Exchange Node that the message or feedback is being addressed.

The Sequoia Project. An organization that manages the nationwide network formerly known as Nationwide Health Information Network now called eHealth Exchange, which uses a set of standards, services and policies that enable secure health information exchange over the Internet

Transactional Basis. The transmission of message content or a notice within a period of time of receiving message content or notice from a sending or receiving party as may be further set forth in a specific exhibit.

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 Michigan Health Information Network Shared Services 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 Trusted Data Sharing Organization must follow to share specific message content with the Michigan Health Information Network Shared Services.

Use Case Exhibit. 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, Michigan Health Information Network Shared Services, and other Trusted Data Sharing Organizations. 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 Michigan Health Information Network Shared Services (MiHIN) upon request and via the MiHIN website at www.mihin.org.

View Download Transmit (VDT). A requirement for Promoting Interoperability 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.

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

XDS.b. The Integrating the Healthcare Enterprise® standard for Cross-Enterprise Document Sharing revision b, which provides specifications to query and retrieve patient relevant healthcare data held within a community.

1. Introduction

1.1 Purpose of Use Case

Allows healthcare providers to send case reports regarding a patient's infectious disease status to a public health agency

Infectious diseases kill more than 17 million people around the world each year. [1] Infectious diseases can be transported in several ways, including through human contact, animals and insects, food, water, or through contact with organisms in the environment.[2] The ability for infectious diseases to spread rapidly through a diverse number of ways emphasizes the need for fast and reliable reporting systems.

Reporting infectious diseases is an important component of overall public health. According to the Centers for Disease Control and Prevention (CDC):

> Public health agencies need to manage cases of "reportable conditions" in their surveillance systems. Upward of 90 conditions are required by law to be reported in every state and territory. [Surveillance of these cases of reportable conditions is] needed to manage outbreaks like Ebola or Measles, as well as to monitor more routine trends that need to be investigated and managed by public health officials to protect the public from infection (e.g. cases of multi-drug resistant tuberculosis).[3]

State, local, and territorial laws and regulations require the transmission of reportable event data and, at times, suspected reportable event data of certain infectious and non-infectious conditions to public health agencies (PHAs) to support disease monitoring and surveillance.

Healthcare providers are required to report communicable diseases so that:

- Outbreaks can be managed
- More routine trends can be investigated and managed
- The public can be protected from infection
- Treatment and education can be provided to impacted populations and providers

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[1] World Health Organization, *World health report* (2017), accessed on April 25, 2017, http://www.who.int/whr/1996/media_centre/press_release/en/

[2] Mayo Clinic, *Infectious Diseases – Overview*(2017), accessed June 13, 2017, http://www.mayoclinic.org/diseases-conditions/infectious-diseases/home/ovc-20168649

[3] Laura Conn and John Loonsk, "Electronic Case Reporting: elCR and Trigger Implementation Discussion (Presentation)," *Public Health – EHR Collaboration Initiative* (May 17, 2016), accessed June 14, 2017, https://www.cdc.gov/ehrmeaningfuluse/docs/vendors_collaboration_initiative_webinars/2016-05-17-vendorcall_eicr_and_trigger_codes_final-508.pdf

- Preventive measures can be enacted
- Long-term success efforts can be measured
- Research into causes and cures can be more exact

As healthcare providers adopt modern electronic health record (EHR) technology, they are becoming better-equipped to automatically send comprehensive case reports about infectious diseases as part of their daily routine. Certified EHR technology helps identify patient populations with reportable conditions, and supports securely sending electronic initial case reports (eICRs) through Consolidated Clinical Document Architecture (C-CDA) files.

The capability for healthcare providers to send eICRs electronically is more efficient and secure than fax and allows for data to be sent quickly to a public health agency.

eCR reporting satisfies eligible hospitals regulatory requirements of the Public Health and Clinical Data Exchange objective for the Center for Medicare and Medicaid regulatory requirements, Promoting Interoperability Program and the Merit based Incentive Payment System (MIPS).

Currently there are many reportable conditions available for eCR. Please click on this link to view a list of reportable diseases in Michigan:

https://www.michigan.gov/documents/mdhhs/MDHHS_Brick_Book_609755_7.pdf

According to the CDC:

> When patients with certain conditions (Zika, Pertussis, TB, etc.) exist in clinical care, they need to be promptly shared with appropriate Public Health Agencies (PHAs) – even, at times, before the end of an encounter. Clinicians are not always good at initiating this process – either with paper or by web.
>
> Public health agency surveillance systems need to work these "cases" to… report, investigate, confirm, match with labs, manage, trace exposures, and, sometimes, connect with prevention or treatment
>
> Hence needs for:
>
> – a transferable format (message or structured document),
>
> – with a highly consistent set of case data,
>
> – that is reliably consumable and processable by public health decision support and surveillance / outbreak management systems.

> In the U.S., even a minor Ebola outbreak put a spotlight on the [electronic health record] involved – this is a high-risk area for everyone - important to get right.[4]

An interoperable electronic case reporting (eCR) capability between healthcare providers and public health reporting agencies allows reduced costs for stakeholders, and increased accuracy, effectiveness, and speed of reporting cases of infectious diseases.

Electronic case reporting also lays the foundation for two-way data exchange so clinicians can collaborate better with public health officials during outbreaks, while staying better-informed. State public health reporting data is also used to support national and international disease surveillance efforts.[5]

For the purposes of this document, "electronic case reporting" is a verb and "electronic initial case report" is a noun.

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[4] Conn, "Electronic Case Reporting."

[5] Michigan Department of Health & Human Services, *Communicable Disease Reporting in Michigan: Why Report?*, State of Michigan (2017), accessed on April 25, 2017, http://www.michigan.gov/mdhhs/0,5885,7-339-71550_5104_31274-12538--,00.html

1.2 Message Content

For this use case, Message Content means an eICR or a Reportability Response about an eICR.

The eICR messages will first be evaluated for structure and then for content. The content requirements noted in the R2 standards set the minimum requirements for eCR validation. MDHHS has additional content obligations that may change the section and template criteria to required, strongly recommended, recommended or optional.

1.3 Data Flow and Actors

1.3.1 Data Flow

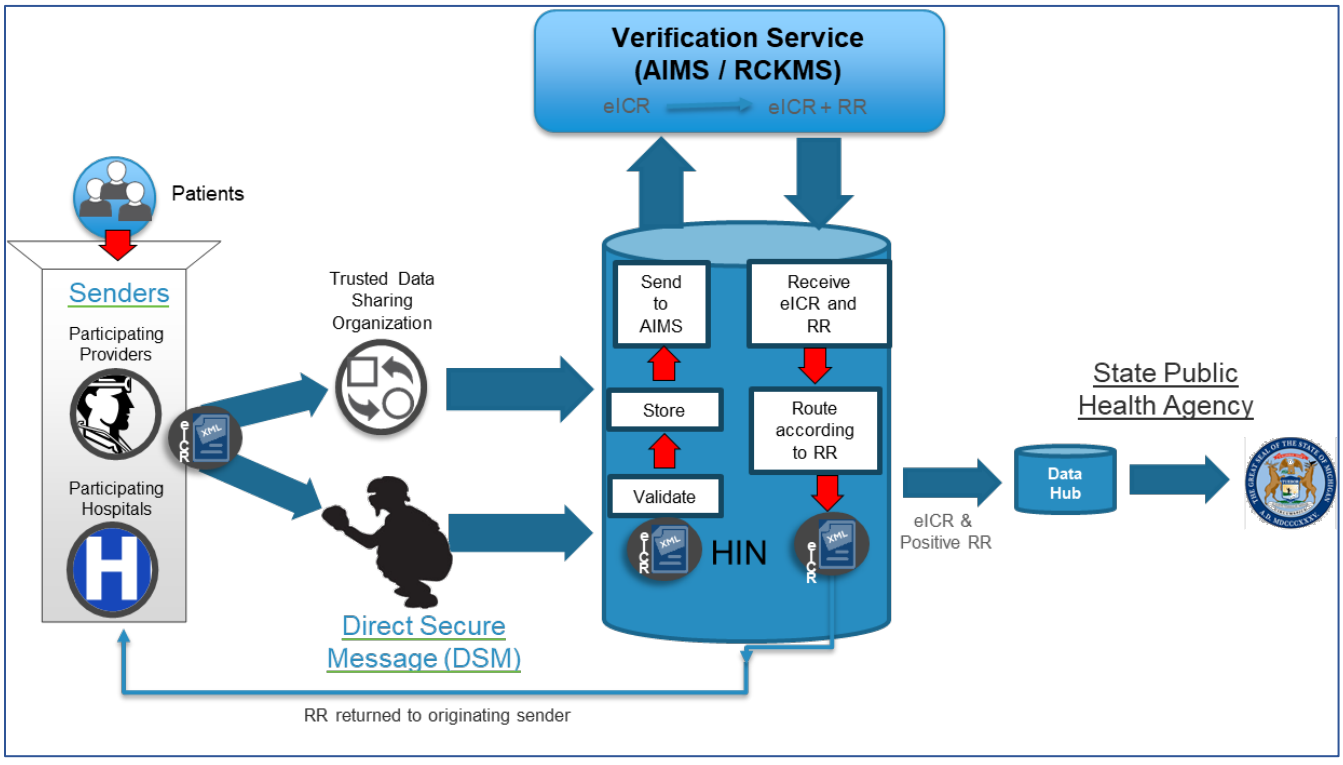


Figure 1. Data Flow for eICR Created by EHR

Figure 1 presents the data flow for when the eICR is created by an EHR and is sent by the health provider. It includes proposed data flow recommended by the CDC:

1. Originating provider sends electronic Initial Case Report (eICR) to MiHIN
2. MiHIN passes eICR to the APHL Informatics Messaging Service (AIMS) Platform for verification
3. Verification service uses a clinical decision support engine and reportable condition knowledge management system (RCKMS) to determine if record is positive or negative for reportable conditions

4. If positive, eICR and RR is sent to public health agency and original provider
5. If negative, RR is sent back to originating provider

For more information about this use case, refer to the documents linked below.

1.3.2 Actors

- *Actor:* eICR Submitters
  - *Role:* deliver content that is compliant with the standard specified in HL7 CDA® R2 Implementation Guide: Public Health Case Report, Release 2: the Electronic Initial Case Report (eICR), Release 1, STU Release 1.1 - US Realm; send and receive messages (RR) in compliance with the transport standard specified; manually trigger or automatically send messages based on a set of trigger codes.

- *Actor:* Health Information Exchange Service (MIHIN):
  - *Role:* receive data electronically from the eICR Submitters and pass it along to the Verification Service Report Recipient; pass RR messages back to the eICR Submitter and to the Public Health Report Recipient; pass appropriate eICR messages from the Verification Service Report Recipient to the Public Health Report Recipient

- *Actor:* The Verification Service Report Recipient (RCKMS):
  - *Role:* receive messages in compliance with the transport standard specified; apply logic set rules to make appropriate reportability decisions

- *Actor:* The Public Health Report Recipient:
  - *Role:* receive messages in compliance with the transport standard specified; process messages and make them available to the appropriate public health entities.

The use case summary is available online at https://mihin.org/electronic-case-reporting/. You can contact MiHIN at www.mihin.org/requesthelp for more information.

2 Standard Overview

2.1 Message Format

At this time, Public Health's prime focus is on the CDA model for electronic case reporting (ECR). EHR certified vendors are already CDA enabled and many are not ready to create the FHIR Standard. Here is a brief description for each of these standards.

Clinical Document Architecture (CDA), also known as HL7 V3, is limited to "clinical" use cases and incorporates a vast and somewhat complex structural offering. CDA allows clinical concepts to be structured differently in different circumstances. The message includes a header with sections and templates requiring narrative text that may be presented in various ways, such as, in a paragraph, a list, a table, textual content and hyperlinks, to name a few. Its purpose is to allow implementers to express a clinical concept in any degree of rigor and granularity. To view the HL7 CDA® R2 Implementation Guide: Public Health Case Report, Release 2 - US Realm - the Electronic Initial Case Report (eICR) located at:

http://www.hl7.org/implement/standards/product_brief.cfm?product_id=436

Fast Healthcare Interoperability Resources Standard, (FHIR) was created to provide an open standard, to improve interoperability, streamline implementation, simplify the format and easily support. FHIR offers broader use, it's more flexible, content is handled by referencing existing resource definitions, and FHIR resources represent content structured one way and in a consistent way. For more information, refer to this website:

http://www.hl7.org/implement/standards/fhir

Health Care Organizations (HCO) may choose to use the ECR Now FHIR App, to create CDA messages for the downstream systems, RCKMS and MDHHS, to receive their data. This App is offered by APHL and the AIMS Team. Eventually the goal is to have HCOs incorporating FHIR reporting to send their ECR data. For more information, refer to this website:

https://ecr.aimsplatform.org/ecr-now-fhir-app

2.2 Message Example

For an example of what a properly formatted message should look like for this use case, visit:

https://github.com/HL7/CDA-phcaserpt-1.3.0

3 Onboarding Process

3.1 Initial Onboarding

For organizations to share data with MiHIN under this use case, the organization undergoes two onboarding processes simultaneously. The two onboarding processes are legal onboarding and technical connectivity onboarding. These may occur in parallel – i.e., the organization can review and complete legal agreements with MiHIN while simultaneously establishing and testing technical connectivity. To initiate these two parallel 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 https://mihin.org/use-case-categories/.

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:

- DSM – Direct Secure Messaging
- API – Application Programming Interface

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 or more supported transport methods 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 to confirm connectivity
   a. Test traffic is routed via MiHIN to the appropriate destinations. For eCR, the initial destination is the Association of Public Health Laboratories (APHL) which performs message validation via the APHL Informatics Messaging Services platform (AIMS). Once message validation is completed, the message is returned to MiHIN and routed to the end destination, the Michigan Disease Surveillance System (MDSS) via the state data hub.
   b. The end destination monitors for inbound test traffic and confirms receipt with MiHIN, which confirms with the organization.
3. Test messages should also be sent directly to AIMS for verification/validation of message structure and content review as part of the testing process.
   a. When ready for assistance with message content review, please email the AIMS team (eCR-Info@aimsplatform.org) and put "EHR Content Review" in the subject line. In the email, include the eICR and RR XMLs labeled for each test scenario in a zip file. After reviewing, the eCR Team will follow up with feedback that may require revisions, content modifications, and retesting.
   b. AIMS also provides an online tool (https://validator.aimsplatform.org/) in which your test eICRs can be run through the AIMS Online Validator (no PII should be used with this tool). This tool will help identify issues with the messages. The AIMS team can also assist with interpreting the results, and work with you to resolve any schema violations, schematron severe warnings, and schematron errors.
   c. More complete information on the above processes and how AIMS can support your implementation can be found here: https://ecr.aimsplatform.org/ehr-implementers/

4. After message structure verification, MDHHS will evaluate the CDA specification to ensure the instances are aligned with public health requirements. These additional constraints include, header requirements, section requirements, template requirements, specific narrative text requirements, and coded information or value sets, should the sections contain (ICD-10 diagnosis codes, LOINC test codes, SNOMED CT findings, etc). MDHHS will also check for content completeness to ensure that variables that are important to public health are at least mapped, if not fully complete.

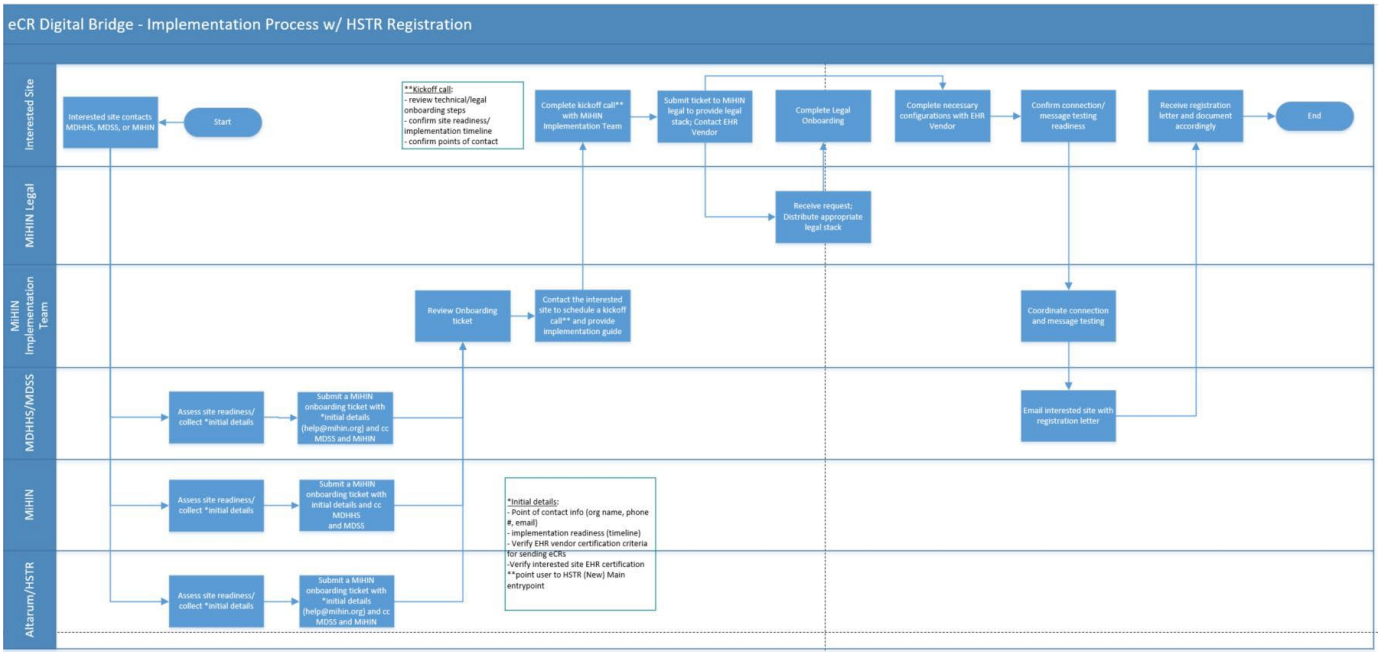
5. After successful testing has been confirmed with MiHIN, APHL/AIMS, and MDHHS, MiHIN will coordinate with the sending facility to proceed to begin sending production messages through to MiHIN.

3.2 Michigan Health System Testing Repository (HSTR) Registration

The Michigan Department of Health and Human Services (MDHHS) has been charged with collecting and recording information on Eligible Professionals and Eligible Hospitals that test with one of the Public Health Promoting Interoperability measures for auditing purposes. This system will allow you to enter the required information and inform the public health system of your request to test for Promoting Interoperability (MIPS and MU). For organizations to register their intent to submit eCR data to MDHHS, organizations will need to log into HSTR (https://mimu.michiganhealthit.org/) and check the box next to Michigan Disease Surveillance System – Electronic Case Reporting (MDSS-eCR).

On the HSTR site, organizations will verify that their hospital sites and physician practice sites are entered with the OID and Facility NPI identification information. The sites may already be present, however, the identification used for the eCR may be different than what is being for electronic lab reporting (ELR), syndromic reporting, etc.

For additional questions related to HSTR, please visit
https://mimu.michiganhealthit.org/Support



4 Specifications

4.1 Message Trigger Events

Hospitals will provide the eICR document via a Consolidated – Clinical Document Architecture (C-CDA) upon discharge to the statewide service (MiHIN). An eICR should be sent for inpatient, ambulatory, and emergency department visits. Messages must be sent at least once, at a minimum, upon discharge. Specifications are outlined below:

- C-CDA must be sent in xml format.
- C-CDA message may be sent as an XDM.zip file. Note that this encoding occurs automatically with most HISP vendors upon sending.

4.2 C-CDA Required Fields

For information on the required fields, please view the HL7 CDA R2 Implementation Guide: Public Health Case Report, Release 2 – US Realm – the Electronic Initial Case Report (eICR), located at: http://www.hl7.org/implement/standards/product_brief.cfm?product_id=436

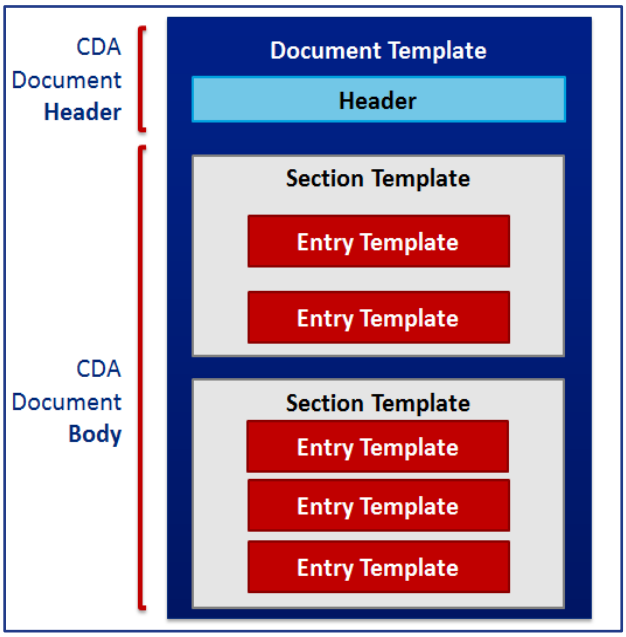


Figure 1. C-CDA File Structure

4.3 Submission via Direct Secure Messaging

C-CDA files that are sent to MiHIN via Direct as email attachments must adhere to the following specifications:

1. There shall be only one CDA file attached per email.

The appropriate MiHIN Direct email address must be in the "To" line. An error will occur if it is in the Carbon-Copy (Cc) line of the outgoing message

4.4 Direct Addresses

Participants using Direct should use the following addresses:

- For test messages with no protected health information (PHI):
  - Diretto: ecr-foc@direct.mihin.net (if using a PROD HISP account for testing)
  - SES: ecr-test@service2.directaddress.net (if using a non-PROD HISP account for testing)
- For production: ecr@direct.mihin.net

4.5 Receiving Reportability Response via Direct Secure Messaging

Outbound C-CDA files will be attachments to Direct email messages. There will be only one C-CDA file attached per email.

For eICR and RR receivers using Direct, MiHIN does not need an acknowledgment response message.

For more information on the Reportability Response, please view the HL7 CDA R2 Implementation Guide: Reportability Response, Release 1, STU Release 1.0 – US Realm located at: http://www.hl7.org/implement/standards/product_brief.cfm?product_id=470

4.6 Receiving via API

Those receivers interested in the API method should follow these steps:

1. Set up a secure HTTPS server endpoint using the following naming convention, inserting own IP and Port numbers: HTTPS://[IP]:[PORT]/ecr/[receiver]/RR Please send this address to MiHIN Onboarding Team prior to connectivity testing.
2. Establish connectivity with MiHIN utilizing a secure VPN Tunnel. The Onboarding Team can provide the appropriate request form to create one.
3. Participate in the VPN Tunnel Connectivity Test scheduled with MiHIN to ensure connection between the receiver organization server and MiHIN's pre-production and production servers.
4. Configure API to the specifications listed in section 4.6.1.
5. Participate in the API Server Test scheduled with MiHIN to ensure conformity to these specifications.

4.6.1 eICR and RR Receiver API Specifications

Request Characteristics

Below are characteristics of the request that clients must accept:

- Communications will be through HTTPS
- The request will be an HTTP POST

- Content may be compressed via gzip (denoted through the Content-Encoding HTTP header)
- HTTP persistent connection may be enabled (denoted through the Connection: Keep-Alive HTTP header)
- The request may be chunked (will be denoted by the Transfer-Encoding header)
- Request body will have the type of application/xml

Response Characteristics

Exchange of eICR and RR behaves differently depending on the response status code returned by the server.

Status Code	Message Replay	Response Contents
None or 500	Yes	If available, the response will contain reasoning why the service failed
400	No	Used when the data cannot be handled by the receiving system, and the message should not be requeued. The response will contain reasoning why the document was rejected.
200	No	Successful response with a trackingId

- All responses will be logged
- All responses will be in JSON (JavaScript Object Notation)
- All responses will contain a globally unique ID to track the response

A sample response body on a successful receive will look like:

```
{
"trackingId": "047ee203-857c-46fb-835e-18b80bccc392"
}
```

In the event of an unsuccessful receive, the response will look like:

```
{
"trackingId": "32c051f3-ad91-4b77-8776-b931a9f99741",
"errors": [{
"title": "Invalid field detected",
"details": "//section/component/ssn must not be null"
}]
}
```

- *Title:* Contains the human readable form of the error
- *Details:* Contain any additional information about the error

5 Troubleshooting

5.1 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 https://mihin.org/requesthelp/	Web form at https://mihin.org/requesthelp/
Secondary Initiation Method	Web form at https://mihin.org/requesthelp/	Web form at https://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 Electronic Case Reporting Use Case can be found at: https://mihin.org/electronic-case-reporting/.

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 Standard Time)

6 Legal Advisory Language

This reminder applies to all Use Case Exhibits (UCEs) or Pilot Activity Exhibits (PAEs) covering the exchange of electronic health information:

The data sharing agreement establishes the legal framework under which Participating Organization (PO) can exchange messages through the Michigan Health Information Network Shared Services Platform, and sets forth the following approved reasons for which messages may be exchanged:

a. By healthcare providers for Treatment, Payment and/or Healthcare Operations consistent with the requirements set forth in Health Insurance Portability and Accountability Act (HIPPA);
b. Public health activities and reporting as permitted by HIPAA and other Applicable Laws and Standards;
c. To facilitate the implementation of "promoting interoperability" 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; and
f. **For any additional purposes as specified in any UCE or PAE, provided that such purposes are consistent with Applicable Laws and Standards**.

Under these agreements, "***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 agency, including the State of Michigan, or the Michigan Health Information Technology Commission 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 which is enforceable against a Party. Without limiting the generality of the foregoing, "Applicable Laws and Standards" includes 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 PO'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 UCE is directed to the exchange of physical health information that may be exchanged without patient authorization under HIPAA, the

PO 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 will apply its best efforts to keep all information in this guide up-to-date. It is ultimately the responsibility of the PO and Sending Facilities to be knowledgeable of changes outside of MiHIN's control.