



Bits and Bytes ADTs

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Michigan Health Information Network Shared Services (MiHIN)

MiHIN is a non-profit organization that provides technology and services to connect disparate sectors to securely, legally, technically and privately share health information.

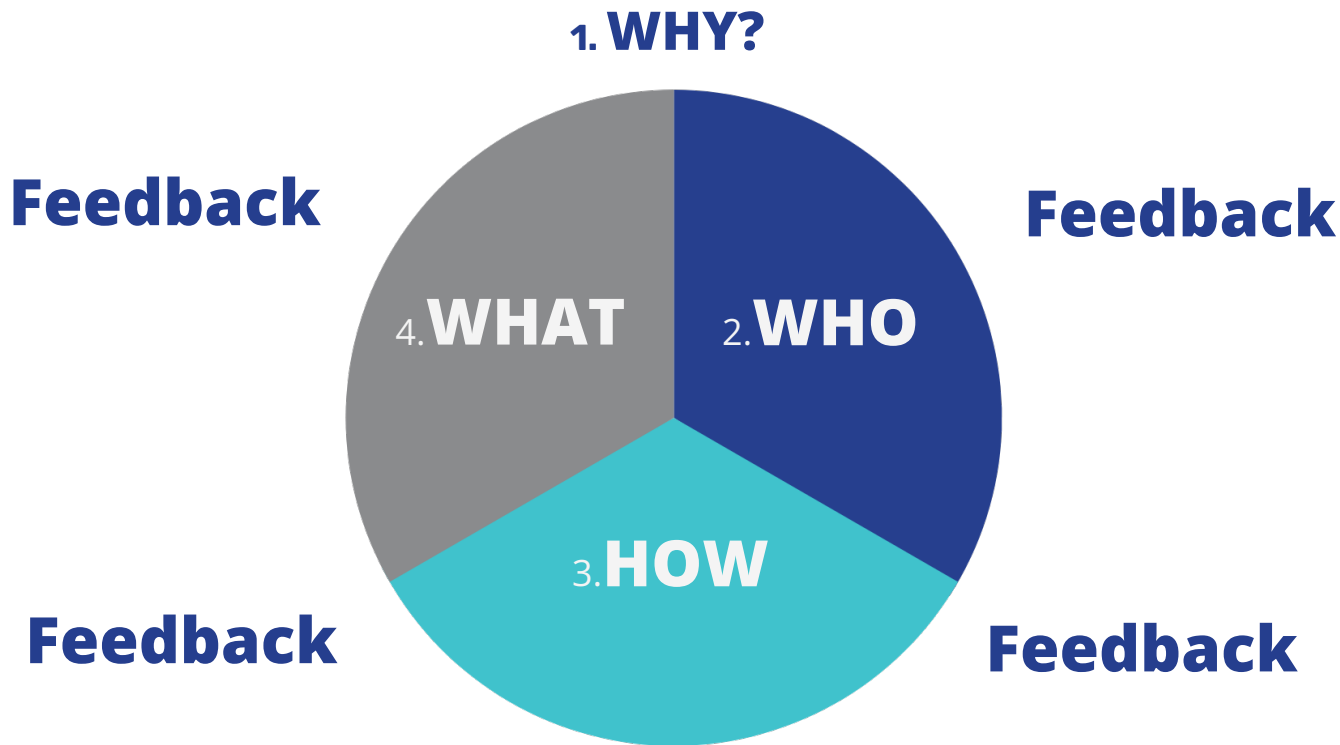
An unbiased data trustee, MiHIN does not provide health care services or produce health care data.

Instead, we help convene to share vital health information to advance care, better outcomes and lower costs.

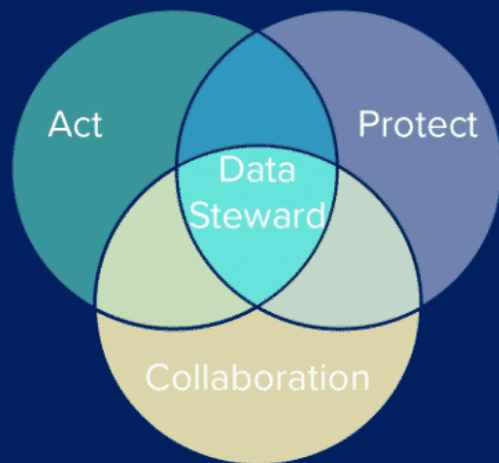


The Group Development Model

(with special thanks to MHEF and MPHI)



Data for Health; Data for Public Good



The Goals of Health Information Exchange

Reduced
Inefficiencies



Improved
healthcare access



Lower
healthcare costs



Better quality of care
and health outcomes



Personalized
medicine for patients



44,582

Michigan care providers with
Active Care Relationships®
through MiHIN, working within

5,637

Michigan care entities

13.1M

Unique Patient Records

Federal Gov't
State Gov't
Health Department
Health Payers
Health Systems
PIHPs



Hospitals
Clinics
Practices
CMHs
Hospices
FQHCs
Pharmacies
Physician Orgs
Physician Hospital Orgs

Doctors
Nurses
Clinicians
Care Managers
Social Workers
Dentists
Pharmacists
CARE SEEKERS!



147

Hospitals in Michigan Sending ADT's to MiHIN

663

Outpatient Sites of Care Sending ADT's to MiHIN

295

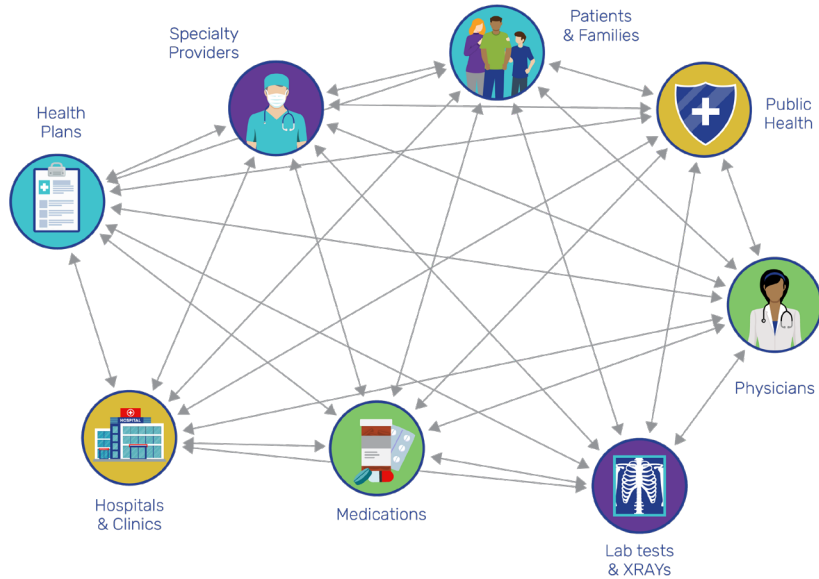
SNF's Sending ADT's to MiHIN

76

Home Health Agencies Sending ADT's to MiHIN

Statewide Health Information Exchange Breaks Down Data Silos and Creates Efficiency

Duplication of effort,
waste and expense



Efficient and cost
effective



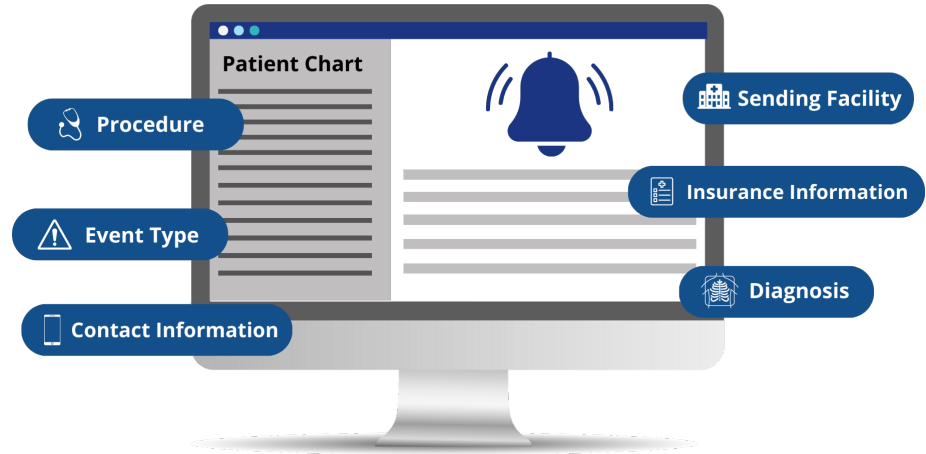
Meeting Agenda

- What is an ADT? (Refresher)
- Major HL7 Standards
- Deep Dive into ADTs
- ADTs and Direct Secure Messaging
- Innovative Uses for ADTs
- MiHIN Delivery Preferences
- Z-segments as Supplemental Data
- Supplemental Data ->
 - What's Next? ACRS Attributes Plug

What is an ADT? (refresher)

ADT stands for Admission-Discharge-Transfer Notification

- A message standard managed by the governing body Health Level Seven (HL7)
- Used to communicate a patient's status at a point in time during an encounter
 - Traditionally associated with hospitals, but not a rule
- When you go anywhere that uses EHR technology to seek care, ADTs are typically created
 - Generated in real-time



Major HL7 Standards

- Messages (AKA v2.x)
 - Pipe delimited (“|”)
 - Information at a single point in time
- Documents (AKA v3.x or CDA)
 - XML
 - Tells a full story after it is over
- FHIR
 - REST (JSON/XML/YAML)
 - Can capture a story, a point in time, or just select data elements

- A01- Admit/visit notification
- A02- Transfer a patient
- A03- Discharge Visit
- A04- Register a patient
- A05- Pre-admit a patient

- A22-patient returns from a 'leave of absence.'
- A23- Delete a patient record
- A24- Link Patient data
- A25- Cancel pending discharge

- A41- Merge account- patient account number
- A42- Merge visit- visit number
- A43- Move patient data- patient identifier list
- A44- Move account information- patient account number
- A45- Move visit information-visit number
- A46- Change patient ID
- A47- Change patient identifier list
- A48- Change alternate patient ID
- A49- Change patient account number
- A50- change visit number
- A51- change alternate visit ID
- A52- Cancel leave of absence for a patient
- A53- Cancel patient returns from a leave of absence
- A54- Change attending doctor
- A55- Cancel change attending doctor
- A60-Update allergy data
- A61- Change consulting doctor
- A62- Cancel change consulting doctor

ADT Event Types

- A06- Change an outpatient to an inpatient
- A07- Change inpatient to outpatient
- A08- Update patient information
- A09- Patient departing – tracking
- A10- Patient arriving – tracking
- A11- Cancel admit or visit notification
- A12- Cancel Transfer
- A13- Cancel discharge or end visit
- A14- Pending admit
- A15- Pending transfer
- A16- Pending discharge
- A17- Swap patients
- A18- Merge patient data
- A19- Patient query
- A20- Bed status update
- A21- Patient goes on a 'leave of absence.'
- A26- Cancel pending transfer
- A27-Cancel pending admit
- A28- Add person data
- A29- Delete person data
- A30- Merge person data
- A31- update person data
- A32- Cancel patient arriving-tracking
- A33- Cancel patient departing -tracking
- A34- Merge patient data- patient ID only
- A35- Merge patient data- account # only
- A36- Merge patient data- patient ID and account number
- A37- Unlink patient date
- A38- Cancel pre-admit
- A39- Merge patient -patient ID
- A40- Merge patient- patient identifier list

Example ADT

MSH|^~\&|MIHIN^EHR|HospitalX^1.1.1.1.1049||MiHIN^1.1.1.1481|20231017193852||ADT^A03^ADT_A03|1001|P|2.6|1224|||||||Windward Hospital
EVN||20161017193852.865-0400|||||Windward General Hospital^1.2.3.4.5.9.99.999.9999.1049
PID|1|1137|||Jones^Aiden||20160108000000-0500|M||2131-1^Other Race^http://hl7.org/fhir/v3/Race|590 S Concord Street^^Flint^MI^48503
PV1|1|||^67^Windward General Hospital&1.2.3.4.5.9.99.999.9999.1049|||||9999912129^Solomon^Carla
OBX|1|NM|150001^HIV-1 ABS-O.D. RATIO^L|||||N|X
DG1|1||21273008^Relative scotoma (finding)^SNOMED-CT||20161014153552.865-0400||^Diagnosis, Active: Visual Field Defects
IN1|1|1772^HEALTHY MICHIGAN HEALTHY PLAN|1027|MEDICAID|||||||Jones^Aiden^Michael|||590 S Concord Street^^Flint^MI^48503

Example ADT

```

MSH|^~\&|MIHIN^EHR|HospitalX^1.1.1.1.1049||MiH
EVN||20161017193852.865-0400||||Windward Gen
PID|1|1137||Jones^Aiden||20160108000000-0500|M
EVN||20161017193852.865-0400||||Windward Gen
PID|1|1137||Jones^Aiden||20160108000000-0500|M
PV1|1||^67^Windward General Hos
OBX|1|NM|150001^HIV-1 ABS-O.D.
DG1|1|21273008^Relative scotoma
IN1|1|1772^HEALTHY MICHIGAN HEALTHY PLAN

```

Example ADT

MSH Message Header HospitalX^1.1.1.1.1049||MiH
EVN Event 017193852.865-0400||||Windward Gen
PID Patient Identification 20160108000000-0500|M
PV1 Patient Visit ward General Hospital&1.2.3.4.5
OBX Observation ^HIV-1 ABS-O.D. RATIO^L|||||N
DG1 Diagnosis 8^Relative scotoma (finding)^SNOM
IN1 Insurance LTHY MICHIGAN HEALTHY PLAN

Example ADT

MSH|^~\&|MIHIN^EHR|HospitalX^1.1.1.1.1049||Mil
EVN||20161017193852.865-0400||||Windward Ger
PID|1|1137||Jones^Aiden||20160108000000-0500|
PV1|1||^67^Windward General Hospital&1.2.3.4.5
OBX|1|NM|150001^HIV-1 ABS-O.D. RATIO^L|||||N
DG1|1||21273008^Relative scotoma (finding)^SNO
IN1|1|1772^HEALTHY MICHIGAN HEALTHY PLAN

Example ADT

MSH|^~&|MIHIN^EHR|HospitalX^1.1.1.1.1049||MiHIN^1.1.1.1481|20231017193852||ADT^A03^ADT_A03|1001|P|2.6|1224|||||Windward Hospital
EVN||20161017193852.865-0400|||||Windward General Hospital^1.2.3.4.5.9.99.999.9999.1049
PID|1||1137||Jones^Aiden||20160108000000-0500|M||2131-1^Other Race^http://hl7.org/fhir/v3/Race|590 S Concord Street^^Flint^MI^48503
PV1|1|||^67^Windward General Hospital&1.2.3.4.5.9.99.999.9999.1049|||||9999912129^Solomon^Carla
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IN1|1||1772^HEALTHY MICHIGAN HEALTHY PLAN|1027|MEDICAID|||||Jones^Aiden^Michael||590 S Concord Street^^Flint^MI^48503

Example ADT

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
Message Type	Message Control ID	Processing ID (T for test and P for production)	HL7 Version ID			
1	2	3	4	5	6	7
EVN	Recorded Date/Time					Event Facility
1	2	3	4	5	6	7
PID	Patient ID	Patient Identifier List	Alternate Patient ID			Date/Time of Birth
8	9	10	11	12	13	14
Sex	Race	Patient Address				
15	16	17	18	19	20	21
Home Phone Number	Business Phone Number				SSN-Patient (Last 4)	Driver's License Number
1	2	3	4	5	6	7
PV1	Patient Class	Assigned Patient Location	Admission Type			Attending Doctor
8	9	10	11	12	13	14
Referring Doctor	Consulting Doctor	Hospital Service	Re-admission	Admit Source	Admitting Doctor	Patient Type
15	16	17	18	19	20	21
Discharge Disposition	Discharged to Location	Admit Date/Time	Discharge Date/Time			
1	2	3	4	5	6	7
OBX	Set ID	Value Type	Observation Identifier			Observation Value
8	9	10	11	12	13	14
Units						Observation Result Status
15	16	17	18	19	20	21
Date/Time of Observation						
1	2	3	4	5	6	7
DG1	Diagnosis Coding Method	Diagnosis Code -DG1	Diagnosis Description	Diagnosis Date/Time		
8	9	10	11	12	13	14
Diagnosis Type						
1	2	3	4	5	6	7
IN1	Set ID -IN1	Insurance Plan ID	Insurance Company ID	Insurance Company Name	Policy Number	
8	9	10	11	12	13	14

Windward Hospital

Flint^MI^48503

ffects
Flint^MI^48503

Color Key:

- Shall always be sent
- Shall be sent if information is available
- Shall be sent conditionally → (See guide)
- Shall be ignored



Do Clinicians Need To Know That? (Nope)

LOTS of places offer ADT ingestion or visualization at different price points





- EHRs
- Care Management Platforms
- HIEs (including MiHIN)
- Some Direct Secure Messaging Platforms
- Other Software Vendors

Demystifying the DirectTrust Event Notification Standard

Direct Secure Messaging overall works just like email

From  Edit identities 


To

 Add Cc  Add Bcc  Add Reply-To  Add Followup-To

Subject

Editor type Priority ☐ Return receipt ☐ Delivery status notification Save sent message in

Maximum allowed file size is 75 MB



DirectTrust Event Notification Standard Summary

Released in 2020 and ANSI approved in 2022



Attached:



Raw ADT

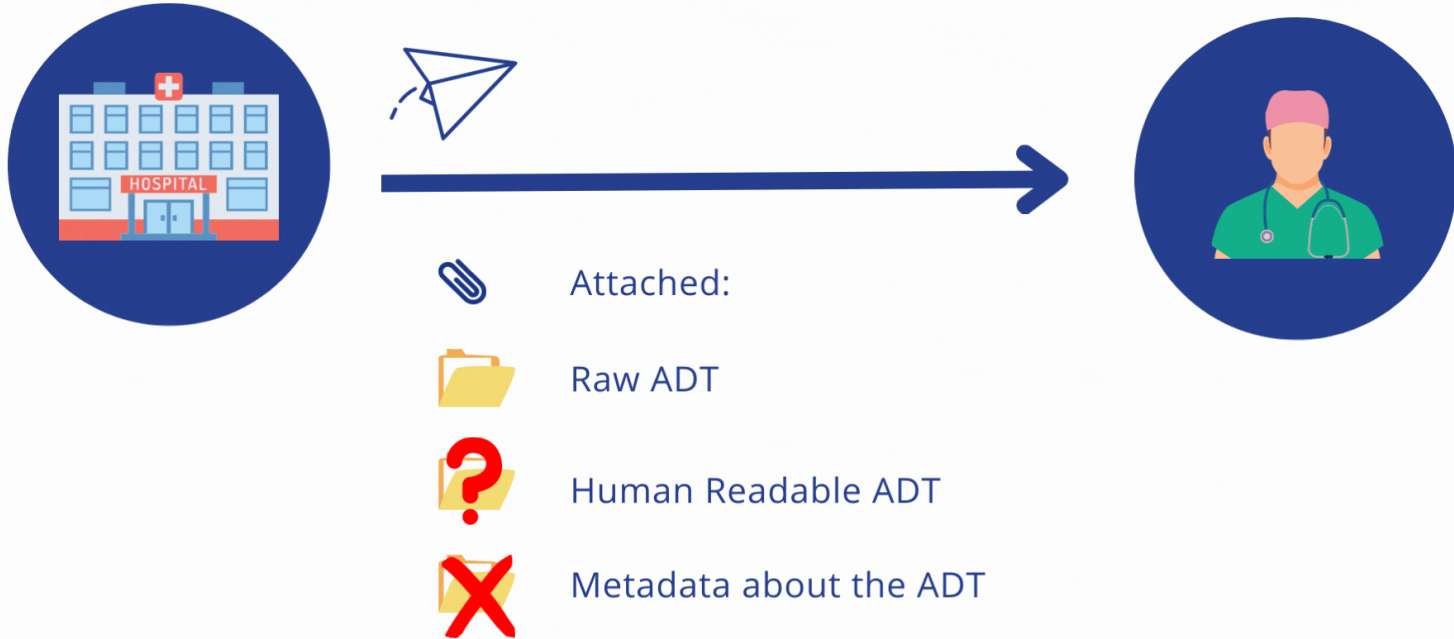


Human Readable ADT



Metadata about the ADT

MiHIN ADTs via Direct Secure Messaging Today



Innovative uses for ADTs

Innovative uses for ADTs

Knowing where a patient has been

Care coordination from inpatient to outpatient settings

Address hospital utilization as primary care

Creating patient registry from live feed with certain criteria

Population disease/condition monitoring

Risk Stratification

Social diagnosis monitoring (Z-codes)

Readmission monitoring

Real-time Active Care Relationships

The Learning Health System

Opportunity to send additional relevant information timely to a transition of care

- *Because ADTs are near-real-time, all of these can be done faster than traditional approaches



MiHIN Delivery Preferences

ADT Notifications Process

1

When Tricia goes to the hospital an ADT Notification is sent to a TDSO and then to MiHIN

2

MiHIN checks ACRS and identifies Tricia's care team

3

MiHIN retrieves contact and delivery preferences for Tricia's care team from the Health Directory

4

ADT Notifications are sent to the care team based on electronic addresses and preferences



Understanding Delivery Preferences

Option 1: Delivery Method

- Direct Secure Messaging
 - Raw ADT or Human Readable?
- Minimum Lower Layer Protocol over Virtual Private Network (MLLP over VPN)
- MIGateway ToC Viewer

Understanding Delivery Preferences

Option 2: What Message Types?

Message Types:

Percent of Receivers Subscribed:

A01; A02; A03; A04; A05; A06; A07;
A08; A09; A10; A11; A12; A13; A14;
A15; A16; A17; A18; A19; A20; A21;
A22; A23; A25; A26; A27; A28; A29;
A30; A31; A32; A24; A33; A34; A35;
A36; A37; A38; A39; A40; A41; A42;
A43; A44; A45; A46; A47; A48; A49;
A50; A51

A01	90%
A02	81%
A03	99%
A04	87%
A05	80%
A06	81%
A07	80%
A08	7%
A31	79%

Z-segments and supplemental data

What is a Z-Segment?

A Z-segment is an allowable extension for specifying a concept that is not expressed in the base standard	While not part of the standard, these extensions should be documented between trading partners	These segments typically start with the letter "Z" as an indicator of being a z-segment

MiHIN Z-segments

NPI Z-Segment

For every provider match in the ACRS against an ADT notification, the corresponding provider National Provider Identifier (NPI) will be appended to the receiver's ADT notification.

Format: ZNP|ACRSNPI|1234567890

Common Key Z-Segment

If an ADT is identified as a patient with a common key, then the patient's common key will be appended to the receiver's ADT notification.

Format: ZCK|CKS|9182398128

Member ID Z-Segment

When a patient is matched with a receiver's ACRS file, the common key from the file will be appended to the receiver's ADT notification.

Format: ZPD|PATIENTID|12345678

Care Team & ACRS Information Z-Segment

For every match in the ACRS, the corresponding patient's care team information will be appended to the message, including information from the receiving organization's ACRS file. The z-segment will contain one field for each care team member (based on ACRS matches).

Format: ZCT|Provider_lastName^Provider_firstName^Provider_npi^practiceName^receiver_organizationOID^patientId~

FEEDBACK & DYNAMIC DISCUSSION

Interested in working with MiHIN?

The first step is to identify a use case with a manageable scope that can grow incrementally.

Questions to ask

1

Does my organization have health data that other members of the care team would find valuable or vice versa?

2

Why do I want to share the data?

3

What is the data going to be used for?

Next steps

From there, let's work together to identify policy or governance challenges and figure out how to create a technology solution to enable that data sharing.

THANK YOU

LET'S CONNECT



mihin.org



[@MiHIN](https://twitter.com/MiHIN)



linkedin.com/company/mihin