Use Case Name:	The University of Michigan Proprietary System for Opioid Overdose Surveillance
Sponsor:	The University of Michigan
Date:	August 21, 2019

Executive Summary

This brief section highlights the purpose for the Use Case and its value. The executive summary gives a description of the Use Case's importance while highlighting expected positive impact.

In 2016, a record number of Americans died from an opioid-related overdose.[1] Michigan alone has experienced a 28% increase in drug overdose deaths in just the past two years.[2] In response to this rapid increase, the University of Michigan Injury Prevention Center (U-M IPC) has created the University of Michigan Proprietary System for Opioid Overdose Surveillance (SOS) to collect overdose data from Emergency Departments (EDs) throughout the state. The data will be analyzed and matched to data provided by medical examiners and Emergency Medical Services (EMS). The SOS system will use the data streams to generate data briefs including demographic information and spatio-temporal summaries. The information can also be used to develop effective responses and prevention strategies to combat the opioid crisis.

For SOS to be widely effective and impactful, it is built upon an architecture that is scalable statewide. Through the University of Michigan Proprietary System for Opioid Overdose Surveillance (SOS) Use Case, the Michigan Health Information Network Shared Services (MiHIN) statewide infrastructure acts as the hub to collect, parse, and distribute opioid overdose data that is contained in hospital Admission, Discharge, Transfer (ADT) notifications already passing through the network.

Purpose of Use Case: The University of Michigan Proprietary System for Opioid Overdose Surveillance Use Case improves opioid overdose surveillance by streamlining data flow and enabling statewide scalability to ultimately improve response and prevention strategies by using the statewide health information network and ADT notifications.

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[1] "System for Opioid Overdose Surveillance," University of Michigan, accessed February 8, 2019, https://injurycenter.umich.edu/system-for-opioid-overdose-surveillance-s-o-s/
[2] Ibid.

Overview

This Use Case will improve the timeliness and quality of overdose reporting to SOS by:

- Streamlining the dataflow
- Decreasing the legal burden of data sharing
- Leveraging the existing statewide infrastructure to expand and scale opioid surveillance efforts.

When a patient is admitted to a hospital, transferred, or discharged, an ADT notification is created by the hospital's electronic health record (EHR) system. The hospital's EHR system sends the ADT notification to MiHIN either directly or via a trusted data-sharing organization (TDSO). For the Proprietary SOS Use Case, all ADT event types, except A08s, will be utilized.

MiHIN parses the ADT notifications it receives from organizations participating in this Use Case, filters out ADT messages coming from the hospital's emergency department which contain a diagnosis code (or codes) relating to opioid overdose. These messages are then routed to U-M IPC to contribute to the SOS data set for surveillance purposes.

The SOS data set will be used to create data briefs which include spatio-temporal summaries and aggregate demographic information. Areas where opioid overdose is high will become more immediately identifiable through a visual display rather than having to search through large datasets. This will allow public health and law enforcement officials to more easily follow trends and target specific regions for intervention and closer monitoring in high-risk areas.

In the past, collecting ADT opioid overdose data for SOS had been a challenge for two primary reasons:

- Signing the necessary legal agreements required to share data can be a burden on health systems
- A limited number of ADT feeds across the state were being leveraged for this purpose

This Use Case takes advantage of existing ADT feeds and the MiHIN Use Case factory legal structure to:

- Increase adoption of the Use Case
- Streamline the legal process for data sharing by offering a simpler legal package that is an addendum to the Master Use Case Agreement (MUCA)

- Increase the scope of SOS data sources by leveraging MiHIN's connection to over 130 hospitals statewide

Persona Story

Christy Munson (38, paralegal) has been suffering with lower back and hip pain for quite some time. After one painful incident at the gym, her doctor prescribed her Vicodin.

Christy was nervous about taking an opioid for her pain, since she had heard many horror stories about the drug and its addictive properties on the news.

Unfortunately, Christy had another concern that both her and her doctor were not aware of. She had an undiagnosed auto immune disease that occasionally induced excruciatingly painful episodes, leading to Christy self-administering. This led Christy to take more than the recommended dosage of her prescription, resulting in an overdose for which she was rushed to the hospital.

The ADT notification generated by her admission at the hospital was sent to the System for Opioid Overdose Surveillance (SOS), where it contributed to a SOS data brief, including a spatio-temporal summary. In other words, the data created out of her experience helped to build a stronger public health understanding of the opioid epidemic.

While Christy would recover from her experience, her emergency and prescription had a great impact in her region, since the SOS system recognized Christy's county as a growing high-risk opioid area with doctors, like her own doctor, turning to opioids as a first response to injuries and pain.
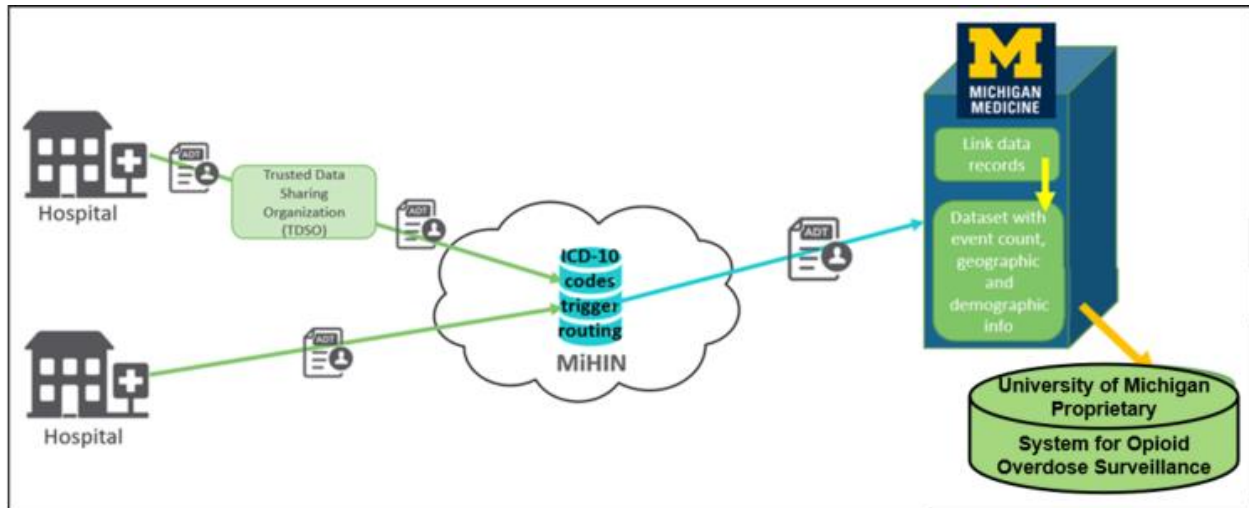
Diagram

Figure 1: Proprietary SOS Use Case Data Flow

1. A patient visits the Emergency Department (ED) of a participating hospital, which sends an ADT notification message containing a diagnosis code for opioid overdose to MiHIN, either directly or through a Trusted Data Sharing Organization (TDSO)
2. MiHIN receives this ADT and identifies the notification message was routed from an organization participating in the SOS Use Case. If the notification message contains a diagnosis code for the SOS Use Case, MiHIN routes the ADT to the U-M IPC designated End Point. If the message does not have an applicable diagnosis code, the message does not get routed through the SOS data flow, or if the ADT message has a diagnosis code of interest and a diagnosis code not relating to opioid overdose, MiHIN will remove the unrelated diagnosis code prior to sending the ADT to U-M IPC.
3. U-M IPC receives the ADT message and links the message to data from Medical Examiners and Emergency Medical Services, using matching to create a dataset without duplicate records
4. U-M IPC pulls only demographic and location information from the ADT dataset to add each record's demographic information to the overall county data, and to an event count to the census block of the overdose location.
5. U-M IPC pushes the de-identified data to their system, which contributes to live data brief

Regulation

This section describes whether this Use Case is being developed in response to a federal regulation, state legislation or state level administrative rule or directive.

Legislation/Administrative Rule/Directive:

☐ Yes
☒ No
☐ Unknown

Meaningful Use:

☐ Yes
☒ No
☐ Unknown

Cost and Revenue

This section provides an estimate of the investment of time and money needed or currently secured for this Use Case.

For MiHIN, the costs associated with this Use Case include the cost of the resources and infrastructure needed to move it into production.

Ultimately, a better system for opioid overdose surveillance will improve prevention strategies and reduce hospital readmission and patient treatment costs. It is estimated that on average, one avoidable hospital readmission saves payers approximately $15,000.[3]

Implementation Challenges

This section describes the challenges that may be faced to implement this Use Case.

There are few, if any, technical challenges to implementing this Use Case because it leverages existing ADT connections between hospitals, TDSOs and MiHIN. It does not impact current workflows or require any additional technical implementation for participating hospitals.

MiHIN bundles and sends all ADTs pertaining to this Use Case to U-M IPC as an individual feed which is routed to a single endpoint. MiHIN directs this feed to an existing U-M IPC endpoint already used for SOS purposes. Therefore, there are no implementation challenges to receive data on the part of U-M IPC.

For MiHIN, implementation includes:

- Building a parser to only include ADT notifications from participating organizations which contain a diagnosis code (or codes) collected for this Use Case
- Setting up a new ADT feed to send those parsed messages to U-M IPC

There are also few legal challenges to implementing this Use Case. Organizations wishing to participate in SOS must already be participating in the ADT Use Case. The only additional legal onboarding required is signing the SOS Use Case Exhibit.

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[3] https://hcup-us.ahrq.gov/reports/statbriefs/sb248-Hospital-Readmissions-2010-2016.jsp

Vendor Community Preparedness

This section addresses the vendor community preparedness to readily participate in the implementation of this Use Case.

In order to participate in the Use Case, sending and receiving data sharing organizations need to be able to generate and/or process ADT HL7 messages with ICD-10 codes. Because this Use Case leverages existing ADT transmissions, the vendor community is already prepared to participate in the implementation of this Use Case.

Support Information

This section provides known information on this support for this Use Case.

Political Support:

☐ Governor
☐ Michigan Legislature
☒ Health Information Technology Commission
☒ Michigan Department of Health and Human Services or other State of Michigan department
☐ CMS/ONC
☒ CDC
☐ MiHIN Board

Sponsor(s) of Use Case

This section lists the sponsor(s) of the Use Case

■ The University of Michigan

Metrics of Use Case

This section defines the target metrics identified to track the success of the Use Case.

Success for this Use Case is tracked by the number of hospitals sending opioid overdose data through the Use Case and the number of ADTs sent to the SOS.

Other Information

This section is provided to give the sponsor(s) an opportunity to address any additional information regarding this Use Case that may be pertinent to assessing its potential impact.

No additional information is being submitted at this time.