



Use Case Scenario Summary

Use Case Scenario Name:	Opioid Assistance Bundle
Use Case to Which Scenario Belongs	Computable Knowledge
Sponsor	Michigan Department of Health and Human Services
Date	12/11/19

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

Opioid drug abuse is a well-documented national epidemic, affecting all aspects of society without discrimination. While U.S. residents constitute less than 5% of the world population, they consume 80% of the global opioid supply and 99% of the global hydrocodone supply.¹

In the last decade, U.S. deaths due to opioid-related overdoses have tripled, increasing from approximately 17,500 in 2006 to 42,200 in 2016.² In October 2017, the U.S. Department of Health and Human Services declared the opioid crisis a national public health emergency.³ The opioid crisis has also resulted in a substantial cost burden to society—in 2013, healthcare costs, criminal justice expenses, and productivity losses attributable to opioid misuse were estimated to total \$78.5 billion;⁴ this cost is expected to increase further in the coming years.

¹ Bert Fellows, MA, et al, "Therapeutic Use, Abuse, and Nonmedical Use of Opioids: A Ten-Year Perspective," *Pain Physician* 13 (2010): 01-435, accessed February 2, 2017, <http://www.painphysicianjournal.com/linkout?issn=1533-3159&vol=13&page=401>

² Bert Fellows, MA, et al, "Therapeutic Use, Abuse, and Nonmedical Use of Opioids: A Ten-Year Perspective," *Pain Physician* 13 (2010): 01-435, accessed February 2, 2017, <http://www.painphysicianjournal.com/linkout?issn=1533-3159&vol=13&page=401>

³ "HHS Acting Secretary Declares Public Health Emergency to Address National Opioid Crisis," U.S. Department of Health and Human Services, October 26, 2017, <https://www.hhs.gov/about/news/2017/10/26/hhs-acting-secretary-declares-public-health-emergency-address-national-opioid-crisis.html>

⁴ Florence, Curtis, Feijun Luo, Likang Xu, and Chao Zhou. "The economic burden of prescription opioid overdose, abuse and dependence in the United States, 2013." *Medical care* 54, no. 10 (2016): 901.

Rates of opioid prescribing have risen in tandem with rates of opioid abuse and overdose for years⁵. Addiction to both prescription and illicit opioids often begins with a legitimate prescription from a healthcare provider; most new heroin users started out misusing a prescription opioid.⁶

This creates a difficult situation for providers who want to provide patients the medications they need to control their pain but are rightly concerned about the potential for abuse and other side effects of those medications.

The Opioid Assistance Bundle use case scenario provides tools which can be used to assist in opioid prescribing and management decisions.

Purpose of Use Case: The Opioid Assistance Bundle use case scenario applies Knowledge Objects (KOs) holding computable knowledge in the form of algorithms to health information already flowing through the Michigan Health Information Network Shared Services (MiHIN). Each computer algorithm in this bundle addresses opioid prescribing and management, enabling more actionable and timely reports and messages to be delivered to care team members.

Overview

This overview goes into more details about the use case.

The safety of using prescription drugs depends on many factors, including the types of medications, dosages, other substance use and individual patient health factors. The KOs in the Opioid Assistance Bundle aim to address various challenges presented by prescribing and managing opioid use for patients. There are several different categories of KO which are detailed in the Computable Knowledge Use Case Summary.

Opioid Assistance Bundle KOs have the potential to serve numerous populations from patients to practitioners to health system administrators. As new KOs are added to the Opioid Assistance Bundle, they will be detailed herein.

Opioid Prescription Detectors

Opioids, which slow down the breathing rate, should not be taken together with benzodiazepines (such as Xanax) or certain muscle relaxants because these combinations increase the risk of life-threatening respiratory depression. However, these drugs are sometimes co-prescribed because of the patient's unique medical needs.

⁵ Christine Vestal, "States, CDC Seek Limits on Painkiller Prescribing," The Pew Charitable Trusts, March 3, 2016, <http://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2016/03/03/states-cdc-seek-limits-on-painkiller-prescribing>

⁶ "Opioid Addiction 2016 Facts & Figures," American Society of Addiction Medicine, accessed October 31, 2019, <https://www.asam.org/docs/default-source/advocacy/opioid-addiction-disease-facts-figures.pdf>; Cicero, Theodore J., Matthew S. Ellis, Hilary L. Surratt, and Steven P. Kurtz. "The changing face of heroin use in the United States: a retrospective analysis of the past 50 years." *JAMA psychiatry* 71, no. 7 (2014): 821-826.

Healthcare professionals want to ensure that those who need opioid medications receive them while reducing the likelihood of respiratory depression and abuse. To improve patient outcomes, the adjustment of treatment based on clinical changes is essential.

In order to address this issue, KO developers have established an early warning detection system by combining targeted models which collect information from discharge medication reconciliation messages. These KOs:

- 1) Detect when an opioid has been prescribed;
- 2) Detect when an opioid and a benzodiazepine have been prescribed together, and
- 3) Detect when an opioid, a benzodiazepine, and certain muscle relaxers have been prescribed together.

When integrated with MiHIN, the resulting information is available in population level reports to support health system decision making. This information will also be available as a message enrichment to alert the patient's care team of a potentially dangerous medication combination that can be changed.

Future KOs

In the future, additional KOs for this bundle are planned to assist with making opioid use safe and effective. For example, future work may include using computable knowledge to:

- Identify opportunities when alternatives to opioids could be used, and
- Analyze individual opioid prescriptions in new ways, perhaps providing advice about how to minimize opioid exposure tapering or substitution.

Persona Story

To explain this use case, this section follows a persona example from start to finish.

Jorge Mendoza

Jorge Mendoza has a very stressful life. Since immigrating to the U.S. from Mexico, he never feels he has a moment for himself. When he is not overseeing his appliance repair shop in Lansing, he is dealing with family issues. In his small home, he and his wife are taking care of three grandchildren. He has always had a big family, but now in his mid-60s, it's not as easy as it once was. In order to help cope with his stress, Jorge has a prescription for Xanax, a benzodiazepine, to control his anxiety.

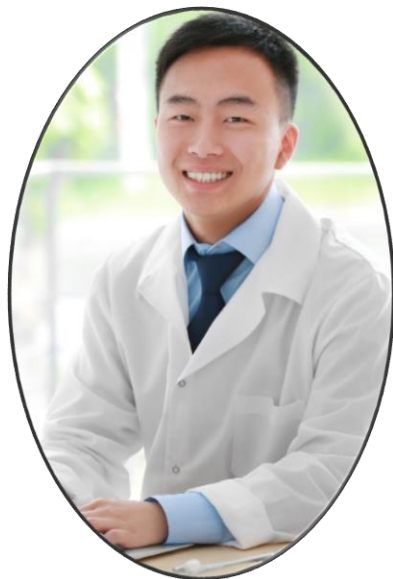
Recently, Jorge injured himself moving a refrigerator. Because of his many responsibilities, he avoided going to the doctor until the pain was no longer bearable. His doctor prescribed



Oxycodone, an opioid, and plans were put in place for physical therapy.

Jorge is taking his medications as prescribed, but he doesn't realize they could have a dangerous interaction. Taking his medications together could lead to potentially fatal respiratory depression.

Dr. Charles Sun



Dr. Charles Sun is a general practitioner in Lansing and loves the connection that he forms with his patients.

One of the things Dr. Sun is known for is always trying the latest healthcare technology or innovation. He loves to share stories with his patients about new tests or devices. One of these new innovations is the Computable Knowledge Use Case and the Opioid Assistance Bundle.

Recently, Dr. Sun saw a Continuity of Care Document (CCD) with an alert for Jorge Mendoza. The alert indicated risk of respiratory depression due to the dangerous combination of medications prescribed to Jorge which included Xanax and Oxycodone.

Dr. Sun revisited Jorge's medical records and realized his medications needed to be adjusted to ensure Jorge's safety.

Dr. Sun immediately reached out to Jorge about alternative pain management strategies they can use and adjusted his medications so that Jorge wasn't in danger.

Dr. Sun is grateful for the Opioid Prescription Detector KOs in the Opioid Assistance Bundle as it provided the tools to help him appropriately monitor opiate use by his patients.

Regina Klausen



Regina Klausen is a quality data analyst with the Mayberry Medical Group. Each day presents a new set of challenges and potential solutions in terms of physician quality metrics. On a typical day, Regina may receive numerous electronic reports and data extracts from MiHIN and the various practices and providers working with Mayberry Medical Group.

Recently, Regina was reviewing a population level report for patients at Mayberry Medical Group to see if the prescribers are following opioid prescribing guidelines. From the report, she discovers several patients are prescribed a dangerous combination of drugs - such as benzodiazepine, and oxycodone - which would put patients at risk for respiratory depression.

She immediately reports the results to the head of the Quality Department. Regina ensures these situations can be minimized by being watchful. Quality data analysts such as Regina can serve as the first line of defense in recognizing problematic patterns in prescription drug use and prescribing. Regina suggests developing educational programs for prescribers to help decrease any dangerous combination of prescription drugs.

Diagram

This diagram shows the information flow for this use case.

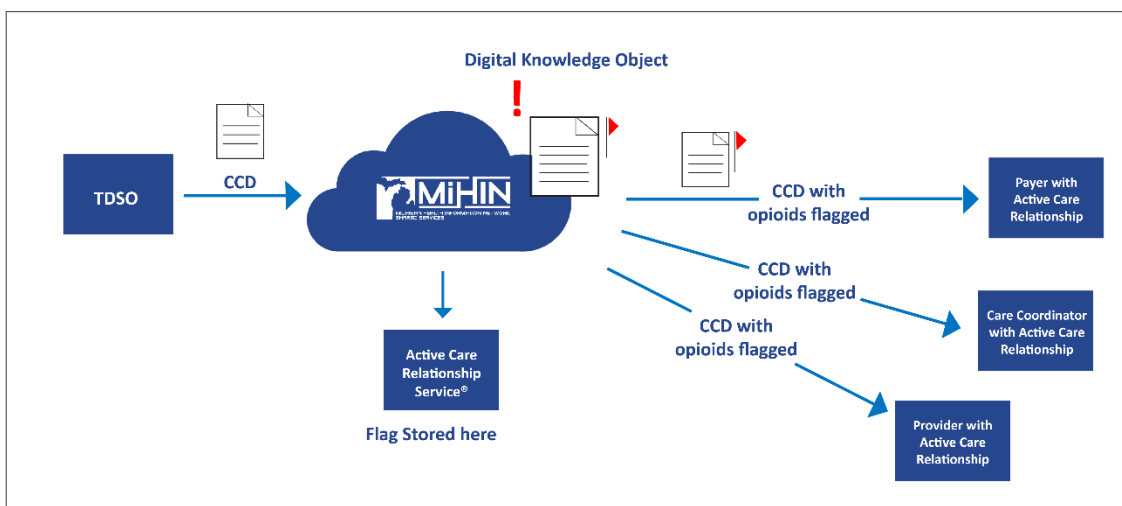


Figure 1. Opioid Prescription Detector Data Flow

1. The Trusted Data Sharing Organizations sends a CCD with a Medication Reconciliation to MiHIN.
2. MiHIN applies the Opioid Prescription Detector KOs to the medications listed in the CCD.
3. The KO produces a flag if the medications include
 - a. An opioid, or
 - b. An opioid and a benzodiazepine, or
 - c. An opioid, a benzodiazepine, and a muscle relaxer.
4. MiHIN stores that flag for a predetermined amount of time in Active Care Relationship Service® (ACRS®) as an attribute, making it available to enrich future messages.
5. MiHIN appends the flag to the CCD and sends to participating organizations with an active care relationship.

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

Promoting Interoperability:

- 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.

To be determined.

Implementation Challenges

This section describes the challenges that may be faced to implement this use case.

Wherever possible, MiHIN's use cases leverage existing infrastructure within the existing network.

The Opioid Assistance Bundle requires that the participant also be sending and receiving Medication Reconciliation messages via MiHIN. For more information about that use case please see: <https://mihin.org/discharge-medication-reconciliation/>.

Vendor Community Preparedness

This section addresses the vendor community preparedness to readily participate in the implementation of this use case.

Wherever possible, outputs from the KOs will be appended to messages already flowing through MiHIN or leverage other existing infrastructure such as Direct Secure Messaging accounts or MiHIN's own Diretto service (more information on Diretto is available here: <https://mihin.org/services/diretto/>)

Support Information

This section provides known information on 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
- Centers for Medicare and Medicaid Services /The Office of the National Coordinator for Health Information Technology
- Centers for Disease Control and Prevention
- MiHIN Board

Other: University of Michigan Department Learning Health Sciences

Sponsor(s) of Use Case

This section lists the sponsor(s) of the use case.

Michigan Department of Health and Human Services.

Metrics of Use Case

This section defines the target metrics identified to track the success of the use case.

- Percentage of relevant Transitions of Care messages (for example, Admission, Discharge, Transfer Notifications and Medication Reconciliation) with an enrichment from the Opioid Assistance Bundle.
- Number of organizations participating in the Opioid Assistance Bundle use case scenario.

Other Information

This section is provided to give the sponsor(s) an opportunity to address any additional information with regard to this use case that may be pertinent to assessing its potential impact.

The Computable Knowledge use case establishes the legal and technical infrastructure required for use of the KOs described in the Opioid Assistance Bundle.

In order to participate in this use case scenario, participants must also participate in Computable Knowledge use case.

As additional opioid-related objects are developed and integrated by MiHIN, new algorithms will be available in the Opioid Assistance Bundle.

KOs will be grouped into scenarios by the topic they address. For instance, the Opioid Assistance Bundle use case scenario contains more than one digital KO and can provide results in more than one opioid-related scenario.