MiCelerity

User Guide

Version 3.2

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Prepared by the Michigan Overdose Data to Action Team

MDHHS
Michigan Department of Health & Human Services
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Change Log

User Guide Version 3.2 Changes (May 2023)
Poisoning classification categories updated.
Addition of skin, soft tissue, and vascular infections (SSTVI)-related ICD-10-CM code information
Removal of neonatal abstinence syndrome, fetal alcohol spectrum disorder, and alcohol poisoning information (this data is no longer collected by MiCelerity)
User Guide Version 3 Changes (January 2022)
Updated to include terminology and guidance on the incorporation of Electronic Death Reporting System (EDRS) data into MiCelerity
User Guide Version 2 Changes (August 2021)
Updated number of codes collected by MiCelerity
Added “Visit ID” and “Visit Sequence” definitions
Updated MiCelerity screenshots to reflect enhancements within system
Changed “Event” terminology to “Diagnosis” terminology
Added “Alerts” section describing new “Alerts” functionality

Description

MiCelerity is an automated, real-time surveillance system designed to collect information regarding fatal and non-fatal drug poisoning[1] events in Michigan. MiCelerity was created in 2019 with funding from the CDC aimed at addressing the opioid overdose crisis and reducing overdose morbidity and mortality. The surveillance system was designed as a repository for events deemed reportable to the Michigan Department of Health and Human Services (MDHHS) under reporting rules R 325.76, R 325.77, R 325.78, and R 325.79. These rules state that any poisonings due to the use of prescription or illicit drugs are reportable to MDHHS and must be reported to MDHHS by the health professional or health facility within five working days of request. MiCelerity removes the burden of reporting from health providers and gives MDHHS and local health jurisdictions the ability to track overdose trends and investigate emerging drug trends in real-time.

MiCelerity has two mechanisms for automatically collecting drug poisoning data. MiCelerity leverages HL7 **electronic health messages** in the form of Admission, Discharge, and Transfer (ADT) messages to collect data on **healthcare encounters**. To collect data on recent **deaths** related to substance use, MiCelerity pulls data from the **Electronic Death Reporting System**.

Healthcare Encounter Data (Electronic Health Messages)

To collect data on **healthcare encounters** related to drug use, MiCelerity leverages HL7 electronic health messages in the form of Admission, Discharge, and Transfer (ADT) messages. ADT messages are triggered by certain healthcare events (such as admission to an Emergency Department (ED)) and contain information regarding demographic and diagnostic information, including ICD-10-CM codes, of the patient. In participating Michigan healthcare facilities, messages about these events are exchanged with the Health Information Exchange (HIE) organization Michigan Health Information Network (MiHIN). Among facilities that submit information to MiHIN *and* participate in the Pay for Performance program, MiHIN scans the following types of ADT messages for drug poisoning-related ICD-10-CM codes:

Code	Triggering Event
A01	Patient admit
A02	Patient transfer
A03	Patient discharge
A04	Patient registration
A05	Patient pre-admission
A06	Change an outpatient to an inpatient
A07	Change an inpatient to an outpatient
A08	Patient information update
A11	Cancel patient admit
A12	Cancel patient transfer

When a drug poisoning-related code is found in one of these messages, a copy of the message is routed into MiCelerity from MiHIN. Relevant information from each message is then retrieved and populated in each patient and drug poisoning diagnosis[2] record in MiCelerity. Data in MiCelerity

[1] Throughout this guide, the terms “overdose” and “drug poisoning” will be used interchangeably and refer to any event in which the use of a prescription or illicit drug results in a morbid condition, including death.

[2] Each drug poisoning-related ICD-10-CM code is considered one diagnosis. If an individual receives a code pertaining to opioid use and a code pertaining to cocaine use in a single ED visit, two diagnoses would register in MiCelerity. In MiCelerity, information can be viewed for individuals or for diagnoses, but data can only be exported at the diagnosis level.

primarily come from EDs, but other facilities such as long-term care or skilled nursing facilities may be captured in MiCelerity if they meet the above criteria.

These messages primarily come from acute care hospitals with EDs, but other types of facilities that exchange HL7 information with MiHIN are also included in the surveillance system. The coverage of MiCelerity is considered statewide, as most EDs in Michigan (~85%) exchange information with MiHIN and are captured in MiCelerity.

The current list of drug poisoning-related ICD-10-CM codes includes 2,472 codes. Relevant codes within the following over-arching categories are included:

ICD-10-CM Code Category	Category Description
F11-F16, F18-F19*	Mental and behavioral disorders due to psychoactive substance use (excluding alcohol and marijuana)
T36-50	Poisoning by, adverse effect of and underdosing of drugs, medicaments and biological substances
A35, A40-41, A48, I26, I33, I38-39, I80, L02-03, L97-98, M00, M46, M72, M86*,**	Skin, soft tissue, and vascular infections (SSTVI)
*Please note that although the system automatically collects data regarding SSTVI and mental and behavioral health codes related to drug use, healthcare facilities that submit data manually are only expected to report drug poisoning events to MiCelerity. **Only included in MiCelerity if the healthcare encounter also has a poisoning of a drug-related mental/behavioral disorder code.	

If a healthcare facility is unable to electronically submit data regarding drug poisoning events to MiCelerity, relevant healthcare encounters are expected to be manually entered into MiCelerity.

Death Data (Electronic Death Reporting System)

To collect data on **deaths** in which the cause of death is related to substance use, MiCelerity captures data from the Electronic Death Reporting System (EDRS). EDRS is a web-based applications in which deaths in Michigan are registered (detailed information can be found at: https://michiganedrs.org/). Funeral directors, physicians, medical examiners, nursing homes, and hospitals are able to submit death records electronically to EDRS at any time of day. EDRS use is not mandatory; use of the system is voluntary. EDRS collects identifying, demographic, and geographic information about the decedent, as well as the underlying and related causes of death reported on the death certificate and other relevant medical information. All death records in Michigan are input into EDRS.

Among deaths reported to EDRS, a copy of the EDRS message is routed to MiCelerity if the underlying or related cause of death ICD-10 code is within one of the following categories:

ICD-10 Code Category	Category Description
F11-F16, F18-F19	Mental and behavioral disorders due to psychoactive substance use (excluding alcohol and marijuana)
T36-50	Poisoning by, adverse effect of and underdosing of drugs, medicaments and biological substances
X40-X44, X60-X64, X85, Y10-Y14	Probable drug overdose death: X40–X44 (unintentional), X60–X64 (suicide), X85 (homicide), and Y10–Y14 (undetermined)

Deaths that are not automatically captured in MiCelerity are not expected to be manually entered at this time; manual event entry is reserved for drug poisoning healthcare encounters.

ICD-10 vs ICD-10-CM Coding

Both ADT and EDRS data that are routed into MiCelerity are identified using International Classification of Disease (ICD) coding, but the coding classification systems for the two types of data (healthcare vs death certificate) differ slightly. Healthcare data utilizes ICD-10-CM (Clinical Modification) codes to systematically classify healthcare encounters, while death certificates utilize the broader ICD-10 codes to classify cause of death. There are many similarities between the two classification systems, but in general, ICD-10 coding of death certificates is less specific. MiCelerity scans ADT messages for a total of 2,472 substance use-related codes, while EDRS messages are scanned for a total of 194 substance use-related codes.

Timeline of MiCelerity Data

The initial version of MiCelerity went into production in March 2020. While the system began collecting ADT data in the test environment in October 2019, any ADT (healthcare) data prior to March 2020 is considered incomplete as system changes and updates occurred between October 2019 and March 2020 that may have affected data quality. When looking at trends, analyzing ADT (healthcare) data from March 2020 forward will give the most comprehensive and accurate results. EDRS data was incorporated into MiCelerity in January of 2021 with some data going back to January 2020. EDRS data can be analyzed from January 2021 onwards; prior to 2021, EDRS data is incomplete.

Suggested MiCelerity Citation: Michigan Department of Health and Human Services. MiCelerity V2.2. Date of access.

Terminology

Admission Location	Variable that denotes the patient first sought medical care: emergency department (E), inpatient/hospitalized (I), or outpatient (O).
Admission or Death Date	Date the patient was admitted for care at the originating healthcare facility or recorded date of death in EDRS
Admit Discharge Transfer (ADT) Message	ADT messages carry patient information for HL7 communications and important information about trigger events, such as patient admit, discharge, transfer, and registration. ADT messages communicate patient demographic and visit information, as well as the reason the message is being sent. ADT messages are typically initiated by the electronic medical records or a registration application and are used to synchronize ancillary systems about the state of a patient. Every time a patient's record is updated, an ADT message is sent.
Age	The age variable in MiCelerity is calculated based on the birth date of the patient and the date of admission or death for the corresponding drug poisoning event. If admission or death date is unavailable, the date the ADT or EDRS message is received is used to calculate age.
Alert	An alert refers to the notification generated once a preset threshold, based on some number of visits/deaths or a statistical aberration, is broken.

Cause of Death	Death records from EDRS are assigned one underlying cause of death and one or more related causes of death based on death certificate coding. Underlying and related causes of death are based on ICD-10 codes. The underlying cause of death is the disease or injury which was determined to have directly led to the death. Related causes of death code provide more specifics on what may have contributed to the death. The intentionality of the death and the poisoning classification of MiCelerity records are based on the underlying cause of death.
Diagnosis	One record, or line of data, within MiCelerity. Each line of data is based on one ICD-10-CM (healthcare encounter) or ICD-10 (death) code assigned to an individual either during the course of their healthcare encounter or upon their death. A patient may have several overdose-related diagnosis codes for each visit/death and therefore may have several diagnosis records (lines of data) associated with one healthcare visit/death.
Diagnosis ID	Unique identifier for each record (line of data) in MiCelerity.
Diagnosis Status	Current status of the diagnosis record. A diagnosis can have a status of valid, cancelled or superseded. A diagnosis may be cancelled if the action associated with the incoming message (e.g. admit, discharge) was entered in error, or if a decision was made to not follow-through on the action. A diagnosis may be superseded when a subsequent message replaces the original message.
Discharge Date	Date the patient was discharged from care at the originating facility. Only relevant to ADT (healthcare) data.
Discharge Location	Variable that denotes where the patient was being treated when they were discharged from medical care: emergency department (E), inpatient/hospitalized (I), or outpatient (O).
Drug Class	The drug class groups individual diagnosis codes into broad categories of commonly abused or misused drugs. Drug classes include antiepileptic and sedative-hypnotics, cannabis, cocaine, ethanol, hallucinogen, opioid, sedative, tranquilizer, psychostimulants, other, and unspecified drugs.
Drug Type	The drug type groups individual diagnosis codes into specific categories of drugs following the ICD-10-CM/ICD-10 organizational structure. Mental and behavioral disorders related to substance use and neonatal conditions impacted by substance exposure are classified by the drug of exposure.
EDRS	The Electronic Death Reporting System is a web-based application where deaths in Michigan are registered by relevant users. EDRS captures death certificate data, which includes information such as the underlying and related causes of death, decedent demographic and residence information, and relevant medical information. Relevant EDRS messages are copied into MiCelerity.

Emergency Event	Variable that denotes if the patient was documented as having received care in the emergency department throughout the course of their visit. If this field is left blank, then the patient has no documentation of ED care. If Emergency Event = Y, then the patient received care in the ED during their visit.
Facility Jurisdiction	The facility jurisdiction is the local health department in which the healthcare facility that submitted the message is located. The facility jurisdiction is only available on the Trends Report page and is only relevant to ADT (healthcare) data.
HL7	HL7 is a Standards Developing Organization accredited by the American National Standards Institute (ANSI) to author consensus-based standards representing a broad view from healthcare system stakeholders. HL7 has compiled a collection of message formats and related clinical standards that define an ideal presentation of clinical information, and together the standards provide a framework in which data may be exchanged.
ICD-10 Code	The ICD-10 is a classification scheme published by the World Health Organization (WHO) and used by the United States for classifying the cause and manner of death on death certificates. This classification scheme is similar to, but slightly different from ICD-10-CM codes used to code diagnoses in clinical settings (see below). In MiCelerity, ICD-10 codes are used to identify substance use-related deaths.
ICD-10-CM Code	The ICD-10-CM is a morbidity classification published by the United States for classifying diagnoses and reason for visits in all health care settings. The ICD-10-CM is based on the ICD-10, the statistical classification of disease published by the World Health Organization (WHO). In MiCelerity, ICD-10-CM codes are used to identify substance use-related healthcare encounters.
Jurisdiction	The jurisdiction is the local health department in which the patient lives at the time of the healthcare encounter or death. The jurisdiction is classified as statewide when the address of residence is missing or cannot be successfully geocoded.
Message	Message refers to the ADT or EDRS message routed into MiCelerity that contains patient and diagnostic/death certificate information. One message may contain multiple ICD-10-CM/ICD-10 codes, and therefore, multiple diagnoses (lines of data) may be generated for a single visit.
MMWR Week	This variable provides the Morbidity and Mortality Weekly Report (MMWR) week of the diagnosis based on the admission or death date. For ADT data, if admission date is missing, discharge date is used for the calculation, and if the discharge date is missing, the received date is used. For EDRS data, if death date is missing, the received date is used. MMWR weeks are standard epidemiologic timeframes set by CDC for the purposes of standardized case count reporting.
OID	An OID is a globally unique ISO (International Organization for Standardization) identifier for healthcare facilities. The OIDs in MiCelerity represent the unique

	healthcare facility that sent the ADT message. OIDs are paths in a tree structure, with the left-most number representing the root and the right-most number representing a leaf. The OID's used in HL7 models are always numeric strings (e.g., "2.16.840.1.113883.3.1"). HL7 maintains a registry of OIDs (located at https://www.hl7.org/oid/index.cfm) which contains additional information such as the OID submitter name and contact information, responsible body, and the name and text description of the facility or object identified by the OID. OIDs are only relevant to ADT (healthcare) data.
Patient Disposition	The patient's disposition refers to the status of the patient at the time the ADT/EDRS message was received. A patient may be classified as outpatient, inpatient if admitted to the hospital for care, or deceased.
Patient ID	Unique identifier for each patient/decedent. MiCelerity initiates a patient deduplication process for each received message so that an individual will have the same patient ID for each diagnosis and visit.
Patient Status	The patient status refers to the most current known vital status of a patient (i.e. alive or dead) and is updated across all visits associated with the patient ID when a new message is received.
Patient Status Date	Date the last update to the patient's status was received.
Poisoning Classification	Diagnoses (ICD-10-CM/ICD-10 codes) are classified by poisoning status. For **ADT (healthcare) data**, a diagnosis with an ICD-10-CM poisoning code (T36.0-T50.9) is classified as a probable poisoning healthcare encounter. Diagnoses with an ICD-10-CM code within the mental and behavioral disorders due to psychoactive substance use (F11-F16, F18-F19) are classified as possible poisoning healthcare encounter. Diagnoses with ICD-10-CM codes for co-occurring conditions, such as skin or soft tissue infections, are classified as co-occurring healthcare encounters. For **EDRS (death) data**, the poisoning classification is the same for all rows of data (diagnoses) associated with the death and is based on the underlying cause of death code. Probable poisoning deaths correspond to an underlying cause of death ICD-10 code of X40-X44, X60-X64, X85, Y10-Y14. Possible poisoning deaths are deaths with an underlying cause of death code of T36-T50, F11-F16, or F18-F19. If a death has a substance use-related code as a related cause of death but not as an underlying cause of death, the poisoning classification is designated as poisoning-related death.
Received Date	Date the ADT message was received by MiHIN from the originating facility (healthcare events) or the date the death was initiated in EDRS (deaths)

Region	The region is the emergency preparedness region in which the patient lives at the time of message receipt or lived at the time of death. Users can filter the Demographics Report by region.
Source	The source of the event data which can be either ADT (Healthcare Visit Data), EDRS (Death Data), or MAN (Manually Entered Data).
Visit ID	Unique ID assigned to the healthcare encounter or death. A visit corresponds to a single healthcare encounter or death for an individual and may result in multiple diagnosis records if multiple drug-related ICD-10-CM/ICD-10 codes are assigned during the visit or to the death certificate. Admission or death date/time, received date/time, patient ID, and facility are used to determine unique visits.
Visit Sequence	Sequential number based on number of visits (including death event) captured in MiCelerity for an individual. An individual's first visit captured in MiCelerity is assigned 1, the second visit is assigned 2, and so on.

Similarities and Differences to Michigan Syndromic Surveillance System

MiCelerity and the Michigan Syndromic Surveillance System (MSSS) are both used to track potential overdoses in Michigan. Despite some similarities, each system provides unique functionality and are used to meet different data needs. Important distinctions between these systems are described in detail below.

Reporting mandates

MiCelerity is intended to assist healthcare providers and healthcare organizations to comply with the MDHHS administrative reporting rule for overdoses. There are no legal or administrative mandates for participation in MSSS; however, participation in MSSS allows healthcare organizations to meet certain Centers for Medicare and Medicaid Services Meaningful Use Requirements.

Data sources and elements

MiCelerity collects clinical information from ADT messages sent from healthcare facilities. These messages contain detailed patient-level information including diagnosis codes, insurance information, patient disposition, patient demographics, and patient-identifying information. MiCelerity is the only surveillance system that captures individually identifying information on potential overdose victims. This information allows MiCelerity to link multiple visits to a single patient and enables the data user to examine longitudinal data for each suspected overdose patient. Beginning in 2022, MiCelerity additionally began collecting death certificate data from EDRS.

MSSS also utilizes ADT message to collect clinical information from healthcare facilities, including chief complaint and patient demographics. Most hospitals that participate in MSSS also send diagnosis codes. However, MSSS does not collect any identifying information and does not collect death certificate data.

Coverage

MiCelerity is designed to capture overdose events throughout the entire state of Michigan. Some healthcare facilities are unable to electronically submit data and are not currently captured in the system. EDRS participation is voluntary and some deaths in Michigan may not be captured in MiCelerity. Although MSSS is scalable to statewide coverage, it currently does not have full participation of all reporting healthcare entities. Healthcare providers and organizations that are not currently able to transmit data via ADT messages will be able to report overdoses to MiCelerity manually. MSSS does not have manual entry functionality.

Case finding

MiCelerity identifies potential overdoses by comparing the diagnosis code on each incoming ADT message, EDRS message or manually entered case to a list of overdose-related ICD-10-CM/ICD-10 codes. MiCelerity captures potential overdoses of all types, not just opioid overdoses, and conditions related to overdose, such as certain mental and behavioral health disorders and neonatal abstinence syndrome (NAS). MSSS collects data on all ED visits at participating facilities identifies potential overdoses by the submitted ICD-10-CM code, if present, and a combination of specific terms and phrases in the chief complaint field.

Roles and Responsibilities

Three different levels of roles exist within MiCelerity, with each role having unique access levels and responsibilities. A user's jurisdiction and position determine which data are accessible and editable by him or her.

Administrative staff (**ADMIN**) are state-level staff at MDHHS that directly work on overdose surveillance; these users have unrestricted access to the system and are responsible for maintaining the user list, monitoring data quality, and reporting any issues that occur in the system. Administrative users are able to view personally identifying information for NAS and FAS data.

Local Health Jurisdiction users (**LHJ**) are jurisdiction specific staff whose work is relevant to overdose surveillance. These users are only able to access data within their jurisdiction (i.e. the patient's residence is in the user's local health jurisdiction or they were cared for in a facility within the user's local health jurisdiction) or that are not assigned to a specific local jurisdiction (these diagnoses are considered "Statewide" diagnoses and can occur when an address is missing). These users are responsible for monitoring data quality and reporting within their jurisdictions. Local health jurisdiction users are not able to view personally identifying information such as name, address, or phone number for NAS and FAS data.

Healthcare Providers (**HCP**) are users within healthcare systems tasked with reporting overdoses to MDHHS under the reporting rules previously mentioned. These users have limited access to the system and can only access the cases that user entered. HCP users should check if their facility is a Pay for Performance participating facility and submits data to MiHIN. Otherwise, HCP users are responsible for manually entering their cases into MiCelerity. Ensuring reporting for overdose cases within their facility is the responsibility of the HCP user.

See the below table for the capabilities and responsibilities of these three distinctive user roles:

Topic	Task	ADMIN	LHJ	HCP
Record Management	Can create statewide[a] manual records	**X**	**X**	
	Can create jurisdiction specific manual records	**X**	**X**	

	Can create records only for specific health system/facility			**X**
	Can edit/update previously created records or records within their jurisdiction	**X**	**X**	
Data Usage	Can view all statewide records [a]	**X**	**X**	
	Can view jurisdiction specific records	**X**	**X**	
	Can only view records created/generated by facility			**X**
	Can download data	**X**	**X**	
	Can search for records within their jurisdiction	**X**	**X**	
	Can view personally identifying information for NAS and FAS records	**X**		
	Responsible for monitoring data quality	**X**		
	Can create and monitor alerts	**X**	**X**	
Administrative	Can edit users of the system	**X**		
	Responsible for resolving suspected duplicate records in the "Work Queue" [b]	**X**		
	Responsible for reporting system issues	**X**		
	Ensures reporting rules are being fulfilled for relevant patient encounters			**X**

[a] Statewide records refer to records that are not assigned to a specific local health jurisdiction, which can occur when records are missing addresses.

[b] Currently, de-deduplication is the responsibility of ADMIN users; in the future, this responsibility will transition to LHJ users.

Due to the highly sensitive nature of the data received by MiCelerity, and the need to keep this data private and secure, access to MiCelerity is only granted to a minimum necessary number of staff at the state and local level whose work is relevant to overdose surveillance and prevention within Michigan. Ensuring that the user's role accurately reflects the scope of their work is essential in order to keep the information captured by MiCelerity secure; access level in the system is regularly monitored and updated.

Responsibility of the Healthcare Facilities for Maintaining Data Quality

The primary purpose of MiCelerity is to help healthcare providers meet the requirements of the MDHHS administrative rules that mandate reporting of suspected drug poisonings to MDHHS within five (5) days of knowledge or suspicion of the event(s) (see R 325.76, R 325.77, R 325.78, and R 325.79 of the Michigan Administrative Code). Healthcare providers and health facilities that actively participate in MiHIN data exchange and the BCBSM Pay-for-Performance program for ADT referrals should routinely assess the quality and completeness of their automated data feeds to ensure that all suspected drug poisonings are reported to MiCelerity within the five day reporting window. Any suspected drug poisoning events that have not been received by MiCelerity through the automated data feed must be manually entered into MiCelerity by the healthcare provider.

MDHHS will periodically perform quality assurance audits at the facility level. Audit findings will be shared with the corresponding facility and MDHHS will work with individual facilities to improve reporting as needed.

Access and Jurisdiction Determination

Access to the system will be facilitated by ADMIN users at the state. If a user has existing access to MDSS, access to MiCelerity can be obtained by filling out the User Account Access Request Form (found at the end of this user guide) and submitting the form to MDHHS-MODASurveillance@michigan.gov. Access will be granted to you by an administrative user upon approval. If a user does not have an

existing MDSS account, access can be obtained by (1) filling out the User Account Access Request Form (found at the end of this user guide), (2) submitting the form to MDHHS-MODASurveillance@michigan.gov, (3) requesting access to MDSS through MILogin, and (4) checking "MiCelerity" under Systems Access Needed on the registration form. Users should register for MILogin using the Trusted 3rd Party MILogin website: https://milogintp.michigan.gov. All steps will need to be completed to obtain access to MiCelerity.

A maximum of **3** users will be allowed to access MiCelerity from each local health jurisdiction. Examples of appropriate users at the local health jurisdiction level include: health officers, medical directors, public health nurses, epidemiologists, or overdose program managers. If a user is inactive for 90 days, their account will be automatically deactivated (a notification will be sent prior to deactivation).

Access to the system is determined by the jurisdiction of the user. The jurisdiction of the user is based on where the user is located and their profession with regards to addressing overdoses.

> The jurisdiction of an **HCP** user is the facility in which patients are treated for drug poisoning events and for which the HCP user is responsible for reporting these events. HCP users are only able to report events from their facility and are only able to view records in the system that occurred at their facility.
>
> An **ADMIN** user's jurisdiction is considered the state of Michigan. ADMIN users are able to see and download all records for the entire state and can create or edit any records in the system.
>
> The jurisdiction of an **LHJ** user is the county or local health department area in which they serve. LHJ users can create or edit records in their jurisdiction, as well as statewide records (those without a specific local jurisdiction). They can view and download all records they created and those records which "occur" in their jurisdiction (i.e. the patient associated with the records either went to a healthcare facility within the LHJ jurisdiction or the patient's address is within the LHJ jurisdiction).
>
> Statewide users who are not ADMIN level will have similar access and roles within MiCelerity as LHJ users, with their jurisdiction being considered the state (i.e. they will have create/edit/view/download privileges for any records in the state, but they are not able to access the Work Queue or edit users of the system).

What Can be Done in MiCelerity

ADMIN/LHJ Users

- Export search output (diagnosis or line listing) in pdf or csv
    - Search by desired criteria (e.g., time, diagnosis or patient, geographic area)
    - Save search criteria for future use
- Manage key information about records, including
    - Contact information (e.g., address, phone number, email)
    - Basic demographics (e.g., age, race, ethnicity)
    - Diagnosis information (e.g., ID, status, drug type)
    - Facility information (e.g., Facility name, county)
- Add new healthcare records
- View and track trends and demographics in drug poisoning diagnoses
    - Modify search criteria to meet your needs
- Share data across jurisdictions for multijurisdictional monitoring
- De-duplicate records and resolve issues (only designated ADMIN users)
- Edit user info, roles and privileges and view user activity (only ADMIN users)

HCP Users

- View records within their healthcare facility
    - Search by desired criteria (e.g., time, diagnosis or patient, geographic area)
    - Save search criteria for future use
- Enter new diagnoses and key information about new records, including
    - Contact information (e.g., address, phone number, email)
    - Basic demographics (e.g., age, race, ethnicity)
    - Event information (e.g., ID, status, drug type)
    - Facility information (e.g., Facility name, county)

Functional Areas within MiCelerity

Home

The home page is a landing page that includes a brief overview of MiCelerity, announcements about recent system updates, and links to several helpful resources (MiCelerity User Guide, MiCelerity FAQ, MiTracking Data Portal, and the MDHHS Overdose Data Dashboard). This is the page you will see when you first log into the system.

Data (formerly Events)

The Data tab allows the user to search for or add specific incidents in MiCelerity. The New Diagnosis sub-tab is used to add all pertinent information for a new healthcare record (death records should not be manually entered in MiCelerity), including identifiers, demographic information, geographic information and clinical/death certificate information.

The Diagnosis Search sub-tab allows the user to search for specific diagnoses that have already been entered based on clinical information, cause of death information, patient identifiers, time period or geography. Searches conducted under the Diagnosis Search can be saved for future use.

The Diagnosis Listing sub-tab displays diagnosis records in the system. The list of diagnoses displayed can be based on a saved search constructed under Diagnosis Search, or the list can be filtered using the filter bars under each variable in Diagnosis Listing. Information under Diagnosis Listing can be exported from the system using the Export button.

Dashboard

The Dashboard tab provides aggregate data visualizations for both fatal and non-fatal overdose events. This tab was designed to summarize overall trends in your jurisdiction, which may be especially helpful if you do not have the capacity to export and analyze data via the Data or Reports tab. Non-fatal overdose events can be found in the Healthcare Events sub-tab. Fatal overdose events are in the Deaths sub-tab. The dashboard has filter options that can be applied to the data visualizations. Data visualizations can be displayed by temporal indicators (day, week, etc.) and demographic indicators (age, sex, race, ethnicity). The filter options default to the last 30 days for both fatal and non-fatal overdose events. Due to the greater reporting lag for fatal events, you will want to change the date range when viewing the Deaths dashboard.

Admin

The Admin tab is used for checking or updating user information and resolving possible duplicate indicators for the same patient. The Work Queue sub-tab allows the user to go through data indicating possible duplicate patient indicators. The user can compare the identifiers and decide whether or not the messages relate to the same person, selecting Merge or No Merge as appropriate to release those messages from the work queue. Only users with administrative level access can access the Work Queue.

The Facilities sub-tab is for maintaining information on participating hospitals and other facilities. Admin-level users can update facilities names as needed.

The Users sub-tab is for maintaining user information. Users can update their names, emails or activity status as needed. Admin-level users can update the access level of users.

Reports

The Reports tab allows the user to look at aggregate information and export deidentified datasets. The Line Listing sub-tab enables the user to export a dataset for a specific time period, geographic area and/or diagnosis/poisoning criteria. The line listing exported from this tab encompasses the same events that can be exported under the "Data" tab but has a reduced variable list for quicker downloading and simpler analyses. It also allows the user to choose which variables will be exported, if not all of the variables in the system are desired. For datasets created in the Line Listing sub-tab, each line, or "diagnosis", in the data set refers to one substance use-related ICD-10-CM/ICD-10 code assigned during a healthcare encounter or on a death certificate. If a visit to the emergency department or a death involved more than one drug-related code it will have multiple associated lines/diagnoses in the dataset.

The Demographics sub-tab allows the user to export data aggregated by demographic groups. For example, if the user chooses to track drug class by sex, a report will list the number of females and the number of males with codes for each drug class. Like the Line Listing sub-tab, it allows the user to specify a time period, a geographic area and clinical/death certificate criteria. The user may select one or two demographic variables for aggregation.

The Trends sub-tab provides a tool for visualizing drug-related healthcare visits over time. The user selects a time period of interest, as well as a health department catchment area and a drug class. Pressing the update button will result in the updating of the main graphs to show frequencies of visits and deaths related to the selected drug class in residents of the selected catchment area. The Trends sub-tab also has a section called "Visit Counts by Facilities." This gives the number of total healthcare visits related to drug-related healthcare visits in each hospital or other facility in the selected time period (not relevant to death data).

Alerts

The alerts tab allows users to create and manage rules for generating alerts indicating increases in drug poisoning healthcare encounters or deaths. All users of the system are able to create and manage alerts. The "Rules" sub-tab allows users to see all rules created by any user. From the listing of rules, users can click on the rule ID to view rule details and edit rules. The rules listing can be sorted or filtered by the various columns present.

The "New Rule" sub-tab allows users to create and save a new rule. Users will need to select their UserID and input the email address at which they would like to receive alert notifications. Users can choose to create alerts for specific jurisdictions, facilities, poisoning classifications, diagnosis codes, drug types, or drug classes. An alert can either be based on a raw count or a statistical aberration. If the user chooses "Visit Counts" as the alert type, they will set a count threshold over a period of days (time span). If the count is exceeded during the specified time span, the user will receive an alert email. If the user chooses "Statistical Aberration" as the alert type, the user can then specify the number of standard

deviations above the mean they would like to receive an alert for. Mean and standard deviation are calculated over a lookback period of 84 days. The user can specify the time span for which the number of overdoses are compared to the statistical calculation. If the number of overdoses over the designated time span exceeds the specified number of standard deviations above the mean over the past 84 days, an alert email will be sent to the user.

The “My Alerts” sub-tab shows all alerts generated by MiCelerity for the user. The sounded alerts listing can be sorted or filtered by the various columns present and can be exported for analysis.