Background on State Hospital Discharge Data

At least 90% of all states maintain statewide, centralized, electronic databases of hospital discharge records for nonfederal, acute care hospitals located within their borders[4]. The information collected varies from state to state. Many states use the standard uniform billing form (UB-04) as the basis for their hospital discharge database. Others use only a subset of variables from the UB-04 for their databases, and a few collect additional variables.

The UB-04, developed by the National Uniform Billing Committee, includes such data elements as[5]:

- patient's age
- sex
- zip code
- admission date
- length of stay
- total charges
- principal diagnosis
- up to 17 additional diagnoses

For hospitalizations involving injuries, an external cause of injury should also be coded. External-cause-of-injury codes describe several aspects of an injury: intentionality, mechanism, location of occurrence, external cause status (e.g., civilian activity done for pay, military activity), and activity[6]. Completeness of external-cause-of-injury coding varies by state.

Instructions for Creating the Drug Overdose Subset from a State Hospital Discharge Dataset

To calculate the morbidity indicators for hospitalizations found within this guide, create a drug overdose subset of hospital discharge records using the following specifications[2]:

- Include only nonfederal, acute care, or inpatient. This excludes Veterans Affairs (VA) and other federal hospitals, rehabilitation centers, and psychiatric hospitals.
- Include readmissions and transfers occurring in the hospital.
- Include hospitalizations of state residents only.
- Include out-of-state hospitalizations of state residents if the data are available.
- Include records with a date of discharge between January 1 and December 31 of the reporting year.
- Exclude records of patients who are hospitalized and have a discharge status of Death or Deceased.
- Create the drug overdose hospitalization subset by searching ICD-9-CM principal diagnosis codes **AND** external-cause-of-injury codes[3]:
    - Using the principal diagnosis:
        - Search only the principal diagnosis field for the diagnosis codes 960-979.
    - Using the external cause of injury:
        - Search all diagnosis fields.
        - If a designated external-cause-of-injury field is in the data set, start with that field.
        - Count the first-listed external-cause-of-injury code from the list below.

Principal Diagnosis		**First-listed External Cause of Injury**
960-979	**OR**	E850-E858, E950.0-E950.5, E962.0 E980.0-E980.5

- Once the drug overdose hospitalization subset has been created, calculate case counts for the morbidity indicators for hospitalization as defined for each individual indicator (see pages 23-25).

Morbidity Indicators (with applicable ICD-9-CM codes)

Morbidity Indicators – Emergency Department Visits		
9. All Drug Overdose Emergency Department Visits	ED visits with the following ICD-9-CM codes:	
	Principal Diagnosis	**OR First-listed External Cause of Injury**
	960-979: Poisoning by Drugs, Medicinal, and Biological Substances	**E850-E858:** Accidental Poisoning by Drugs, Medicinal Substances, and Biologicals **E950.0-E950.5:** Suicide and Self-Inflicted Poisoning by Solid or Liquid Substances **E962.0:** Assault by Drugs and Medicinal Substances **E980.0-E980.5:** Poisoning by Solid or Liquid Substances Undetermined Whether Accidentally or Purposely Inflicted
10. Emergency Department Visits Involving All Opioid Overdose Excluding Heroin	ED visits with the following ICD-9-CM codes:	
	Principal Diagnosis	**OR First-listed External Cause of Injury**
	965.00: Poisoning by Opium **965.02:** Poisoning by Methadone **965.09:** Poisoning by Other Opiates and Related Narcotics	**E850.1:** Accidental Poisoning by Methadone **E850.2:** Accidental Poisoning by Other Opiates and Related Narcotics
11. Emergency Department Visits Involving Heroin Overdose	ED visits with the following ICD-9-CM codes:	
	Principal Diagnosis	**OR First-listed External Cause of Injury**
	965.01: Poisoning by Heroin	**E850.0:** Accidental Poisoning by Heroin

Morbidity Indicators – Hospitalizations		
12. All Drug Overdose Hospitalizations	Hospitalizations with the following ICD-9-CM codes:	
	Principal Diagnosis	**OR First-listed External Cause of Injury**
	960-979: Poisoning by Drugs, Medicinal, and Biological Substances	**E850-E858:** Accidental Poisoning by Drugs, Medicinal Substances, and Biologicals **E950.0-E950.5:** Suicide and Self-Inflicted Poisoning by Solid or Liquid Substances **E962.0:** Assault by Drugs and Medicinal Substances **E980.0-E980.5:** Poisoning by Solid or Liquid Substances Undetermined Whether Accidentally or Purposely Inflicted
13. Hospitalizations Involving All Opioid Overdose Excluding Heroin	Hospitalizations with the following ICD-9-CM codes:	
	Principal Diagnosis	**OR First-listed External Cause of Injury**
	965.00: Poisoning by Opium **965.02:** Poisoning by Methadone **965.09:** Poisoning by Other Opiates and Related Narcotics	**E850.1:** Accidental Poisoning by Methadone **E850.2:** Accidental Poisoning by Other Opiates and Related Narcotics
14. Hospitalizations Involving Heroin Overdose	Hospitalizations with the following ICD-9-CM codes:	
	Principal Diagnosis	**OR First-listed External Cause of Injury**
	965.01: Poisoning by Heroin	**E850.0:** Accidental Poisoning by Heroin

Morbidity Indicator 12: All Drug Overdose Hospitalizations

Definition of the indicator

All drug overdose hospitalizations caused by non-fatal acute poisonings due to the effects of drugs, regardless of intent (e.g., suicide, unintentional, or undetermined) or type of drug**.** Hospitalizations related to late effects, adverse effects, and chronic poisonings due to the effects of drugs (e.g., damage to organs from long-term drug use), are excluded from this indicator.

Demographic group

All state residents.

Numerator

Hospitalizations for All Drug Overdose ICD-9-CM Codes[3]

Principal Diagnosis		First-listed External Cause of Injury
960-979	**OR**	E850-E858, E950.0-E950.5, E962.0 E980.0-E980.5

Denominator

Midyear population for the calendar year under surveillance.

Measures of frequency

Annual number of hospitalizations. Annual incidence—crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population).

Data resources

State hospital discharge data (numerator) and population estimates from CDC Wonder (denominator).

Period for case definition

Calendar year (January 1 through December 31) based on date of discharge. If feasible and high quality data are available, jurisdictions are encouraged to analyze their data twice a year (e.g., overdose related hospitalization occurring from January 1 through June 30 and July 1 through December 31).

Limitations of indicator

Injuries that result in hospitalizations represent only a portion of the overall burden of all drug overdoses. Cases are selected based on the principal diagnosis code or first-listed valid external cause code only, not on any mention of an opioid overdose code. The sensitivity and specificity of these indicators may vary by year, hospital location, and drug type.

Limitations of data resources

The accuracy of indicators based on ICD-9-CM codes found in hospitalization data is limited by the completeness and quality of reporting and coding. The overall completeness of external cause coding is of particular concern and should be reviewed in conjunction with the indicator.

Morbidity Indicator 13: Hospitalizations Involving All Opioid Overdose Excluding Heroin

Definition of the indicator

Hospitalizations caused by non-fatal acute poisonings due to the effects of all opioids drugs, excluding heroin, regardless of intent (e.g., suicide, unintentional, or undetermined). Hospitalizations related to late effects, adverse effects, and chronic poisonings due to the effects of drugs (e.g., damage to organs from long-term drug use), are excluded from this indicator.

Demographic group

All state residents.

Numerator

Hospitalizations for All Opioid Overdose Excluding Heroin ICD-9-CM Codes[3]

Principal Diagnosis		First-listed External Cause of Injury
965.00, 965.02, 965.09	**OR**	E850.1, E850.2

Denominator

Midyear population for the calendar year under surveillance.

Measures of frequency

Annual number of hospitalizations. Annual incidence—crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population.

Data resources

State hospital discharge data (numerator) and population estimates from CDC Wonder (denominator).

Period for case definition

Calendar year (January 1 through December 31) based on date of discharge. If feasible and high quality data are available, jurisdictions are encouraged to analyze their data twice a year (e.g., overdose related hospitalization occurring from January 1 through June 30 and July 1 through December 31).

Limitations of indicator

Injuries that result in hospitalization represent only a portion of the overall burden of opioid overdoses. Cases are selected based on the principal diagnosis code or first-listed valid external cause code only, not on any mention of an opioid overdose code. The sensitivity and specificity of these indicators may vary by year, hospital location, and drug type.

Limitations of data resources

The accuracy of indicators based on ICD-9-CM codes found in hospitalization data is limited by the completeness and quality of reporting and coding. The overall completeness of external cause coding is of particular concern and should be reviewed in conjunction with the indicator.

Morbidity Indicator 14: Hospitalizations Involving Heroin Overdose

Definition of the indicator

Hospitalizations caused by non-fatal acute poisonings due to the effects of heroin, regardless of intent (e.g., suicide, unintentional, or undetermined). Hospitalizations related to late effects, adverse effects, and chronic poisonings due to the effects of drugs (e.g., damage to organs from long-term drug use), are excluded from this indicator.

Demographic group

All state residents.

Numerator

Hospitalizations for Heroin Overdose ICD-9-CM Codes[3]

Principal Diagnosis		First-listed External Cause-of-Injury
965.01	**OR**	E850.0

Denominator

Midyear population for the calendar year under surveillance.

Measures of frequency

Annual number of hospitalizations. Annual incidence—crude and age-adjusted (standardized by the direct method to the year 2000 standard U.S. population0.

Data resources

State hospital discharge data (numerator) and population estimates from CDC Wonder (denominator).

Period for case definition

Calendar year (January 1 through December 31) based on date of discharge. If feasible and high quality data are available, jurisdictions are encouraged to analyze their data twice a year (e.g., overdose related hospitalization occurring from January 1 through June 30 and July 1 through December 31).

Limitations of indicator

Injuries that result in hospitalization represent only a portion of the overall burden of heroin overdoses. Cases are selected based on the principal diagnosis code or first-listed valid external cause code only, not on any mention of an opioid overdose code. The sensitivity and specificity of these indicators may vary by year, hospital location, and drug type.

Limitations of data resources

The accuracy of indicators based on ICD-9-CM codes found in hospitalization data is limited by the completeness and quality of reporting and coding. The overall completeness of external cause coding is of particular concern and should be reviewed in conjunction with the indicator.