

**CDC Methamphetamine Overdose v1 Parsed  
Drug Overdose Surveillance and Epidemiology (DOSE) System Guidance  
Syndromic Surveillance Definition Factsheet and Technical Brief**

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Definition Purpose: To assist state, local, tribal, territorial, and federal public health practitioners in monitoring emergency department (ED) visits for suspected nonfatal methamphetamine-involved overdoses.

New or Revised Definition: New

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Definition Description: The Methamphetamine Overdose v1 Parsed syndrome definition was designed to identify ED visits for suspected nonfatal methamphetamine-involved overdoses of unintentional or undetermined intent. The query relies on data in two fields from ED visit records to identify encounters that meet the definition criteria:

- (1) the chief complaint free text field, which is a processed version of the reported chief complaint, may include terms indicating a methamphetamine-involved overdose or poisoning, as well as relevant exclusion terms (e.g., terms such as withdrawal without acute intoxication, etc., which would exclude ED visit records from this syndrome definition), and
- (2) the discharge diagnosis parsed field, which includes International Classification of Diseases, Clinical Modification, 9th Revision (ICD-9-CM)<sup>1</sup>, International Classification of Diseases, Clinical Modification, 10th Revision (ICD-10-CM)<sup>2</sup> or Systematized Nomenclature of Medicine – Clinical Terms (SNOMED-CT)<sup>3</sup> diagnosis codes, with descriptive code text removed, may indicate an acute methamphetamine-involved overdose or poisoning of unintentional or undetermined intent.

Within CDC's National Syndromic Surveillance Program (NSSP) ESSENCE the syndrome query is applied to the Chief Complaint Discharge Diagnosis (CCDD) Parsed field, which combines these two fields of interest. Additional ED visit records may be identified by this query if they include both a chief complaint free text

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<sup>1</sup> World Health Organization. International Classification of Diseases, Ninth Revision, Clinical Modification. World Health Organization; 1980.

<sup>2</sup> World Health Organization. International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM). World Health Organization; 2015.

<sup>3</sup> National Library of Medicine. SNOMED-CT. Accessed [Dec 5 2023].  
<https://www.nlm.nih.gov/healthit/snomedct/index.html>

term indicating methamphetamine involvement and a diagnostic code that indicates an acute drug or stimulant overdose or poisoning.

Use-Cases for Definition:

- Case-finding
- Trend monitoring
- Early outbreak detection

Justification for Development: This definition was developed to help public health practitioners track and understand trends of nonfatal methamphetamine-involved overdoses treated in EDs in near real-time. Understanding trends in methamphetamine-involved nonfatal overdoses is important for the development of evidence-based prevention strategies.

Data Source During Development: ED visits

Development Methods: Members of the CDC’s Drug Overdose Surveillance and Epidemiology (DOSE) team in the Division of Overdose Prevention (DOP) developed this definition by building off the Stimulants v3 syndrome definition<sup>4</sup> to capture only overdoses that indicated methamphetamine involvement. First, ICD-10-CM diagnosis codes indicating acute methamphetamine poisoning of unintentional or undetermined intent were identified. Additional ICD-10-CM, ICD-9-CM and SNOMED-CT diagnosis codes indicating acute stimulant or psychostimulant poisoning of unintentional or undetermined intent were identified. Next, overdose terms and methamphetamine-specific terms that could be presented in the chief complaint free text field were identified. Lastly, exclusion terms were identified (e.g., terms indicating withdrawal without acute intoxication, etc.) to avoid incorrectly capturing encounters that were not due to a methamphetamine-involved overdose.

Validation Methods: Members of the CDC DOSE team piloted the draft definition by manually reviewing records that were captured using a broader query (e.g., any records with the character string “meth”) and comparing this to records that were captured using the full draft definition. Multiple iterations of the draft definition were tested, and the inclusion and exclusion terms were refined with each round of review. The definition was shared with CDC NSSP staff who reviewed the query syntax and made suggestions for improvement. The definition was further refined according to these suggestions and then shared with 48 jurisdictions participating in CDC’s DOSE program for review and feedback. The comment period was open for one month, and 10 jurisdictions submitted feedback during this period. Overall, feedback was positive, and suggestions for revisions focused on query term refinement of inclusion and exclusion criteria. The development team considered all feedback, made additional revisions, and then finalized the definition. Consideration was given to inclusion of ED visits with F15.1 codes. However, F15.1 codes were ultimately not included in the definition, as manual record review demonstrated that these codes indicated methamphetamine use but did not clearly indicate an acute poisoning or overdose event.

Definition Fields and Structure: The Chief Complaint Discharge Diagnosis (CCDD) Parsed field is used to query both the diagnosis codes and chief complaint free text with exclusions (as necessary) to develop the syndrome definition.

- Automatic inclusion:

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<sup>4</sup> CDC Stimulant Overdose v3 definition: <https://knowledgerepository.syndromicsurveillance.org/cdc-stimulants-v3>

- If a diagnosis code indicating an acute methamphetamine poisoning of unintentional or undetermined intent is present, the ED visit is automatically included.
- Conditional inclusion:
  - If the ED visit does not include a diagnosis code for methamphetamine poisoning, the visit is not automatically included. In these instances, the visit is captured only if it includes the following two components and no exclusion terms:
    - 1) chief complaint text indicating methamphetamine involvement **AND**
    - 2a) chief complaint text indicating an overdose or poisoning **OR**
    - 2b) diagnosis code indicating a stimulant/amphetamine overdose or poisoning or diagnosis code indicating poisoning by unspecified drugs (T50.901A or T50.904A).
  - The exclusion terms are applied to the chief complaint text only when the automatic inclusion criteria are not met.

Limitations: The definition was developed to capture suspected nonfatal methamphetamine-involved overdoses treated in EDs. However, it is subject to both misclassification and under/overreporting for several reasons, including limited point-of-care confirmatory testing to identify the drug(s) involved in the overdose, and reliance on self-report, bystander reports, and/or clinical presentations to determine the drug(s) involved in an overdose. The codes provided in the discharge diagnosis field from the ED visit record do not necessarily represent the final diagnosis of a patient and should be considered preliminary. Additionally, some hospitals may enter all diagnosis codes from a patient's entire medical history, including codes for previous methamphetamine-involved overdose visits; the definition may incorrectly capture such encounters that were not for a true methamphetamine-involved overdose and thus result in overreporting. Finally, methamphetamine-involved overdoses may be more difficult to identify than overdoses involving opioids due to a wide range of associated symptoms, including some that may overlap with mental health disorders. The team attempted to identify all appropriate inclusion and exclusion terms to capture any suspected nonfatal methamphetamine-involved overdoses while avoiding capturing encounters that were not for an acute methamphetamine-involved overdose or poisoning, but it is possible that some of these encounters were erroneously captured, leading to overreporting.

## Detailed Definition Components

**Table 1.** Descriptions of discharge diagnosis codes, concepts and chief complaint terms included or excluded in the CDC Methamphetamine Overdose v1 Parsed definition.

Variable Type	Automatic inclusion?	Terms	Description (discharge diagnosis codes only)
<b>Inclusions</b>			
<i>Discharge Diagnosis codes</i>			
ICD-10-CM <sup>1</sup>	Yes	T43651A	Poisoning by methamphetamines, accidental (unintentional), initial encounter
		T43654A	Poisoning by methamphetamines, undetermined, initial encounter
ICD-9-CM <sup>1</sup>	No, only include if other methamphetamine-related terms are also present	96970	Poisoning by psychostimulant, unspecified
		9700	Poisoning by analeptics
		97089	Poisoning by other central nervous system stimulants
		9709	Poisoning by unspecified central nervous system stimulant
		96972	Poisoning by amphetamines
		96979	Poisoning by other psychostimulants
		E8542	Accidental poisoning by psychostimulants
		E8543	Accidental poisoning by central nervous system stimulants
ICD-10-CM	No, only include if other methamphetamine-related terms are also present	T50901A	Poisoning by unspecified drugs, medicaments and biological substances, accidental (unintentional), initial encounter
		T50904A	Poisoning by unspecified drugs, medicaments and biological substances, undetermined, initial encounter
		T43601A	Poisoning by unspecified psychostimulants, accidental (unintentional), initial encounter
		T43604A	Poisoning by unspecified psychostimulants, undetermined, initial encounter
		T43621A	Poisoning by amphetamines, accidental (unintentional), initial encounter
		T43624A	Poisoning by amphetamines, undetermined, initial encounter
		T43691A	Poisoning by other psychostimulants, accidental (unintentional), initial encounter
		T43694A	Poisoning by other psychostimulants, undetermined, initial encounter
SNOMED-CT	No, only include if other methamphetamine-related terms are also present	296291005	Amphetamine overdose
		296290006	Central nervous system stimulant overdose (disorder)
		61803000	Poisoning caused by central nervous system stimulant (disorder)
<i>Chief Complaint terms</i>			

Methamphetamine-related terms	Conditional, include only if other overdose-related terms are also present AND no exclusion terms	Desoxyn, meth/methamphetamine, crank, overamping, tweak, ice, speed
Overdose-related terms	Conditional, include only if other methamphetamine-related terms are also present AND no exclusion terms	Abdominal pain, agitation, aggressive, altered mental status, arrhythmia, bad reaction/trip, bizarre, bugs, chest pain/pressure/tightness, combative behavior, delusion, delirium, diaphoretic, disoriented, dizziness, erratic behavior, feels bad/weird, fidgety, flight of ideas, formication, hallucination, hearing voices, heart attack, heart palpitations, heart racing, high blood pressure, hyperverbal, incoherent, ingest, intoxication, lightheaded, manic, nausea, not feeling well, not right, not sleeping, numb, overdose, paranoid, poison, racing heart, restless, seeing snakes/things, shaking, shoot/shooting/shoots up, shortness/short of breath, snort, seizure, sores all over, picking at skin, scratching, psychotic, tachycardia, tingling, tremulous, tripping, trouble sleeping, twitching, vomiting, violent, weakness
<b>Exclusions</b>		
Chief complaint terms	Exclude if encounter captured from methamphetamine and overdose-related terms only (i.e., exclusion terms are applied to the chief complaint text only when the automatic inclusion criteria are not met)	Rehab, wants referral, commonly identified negations for methamphetamine-related terms or overdose-related terms, terms indicating withdrawal or detoxification, and terms for other uses of "speed", "crank", "tweak" and "ice" (e.g., fell on ice).

<sup>1</sup>ICD-9-CM and ICD-10-CM code punctuation is removed when querying the CCDD Parsed field.

**Table 2.** ESSENCE syntax, CDC Methamphetamine Overdose v1 Parsed

(,^;T4365[14]A^,OR,(,^(,^;T5090[14]A^,OR,^;9697[029];^,OR,^;9700;^,OR,^;97089;^,OR,^;9709;^,OR,^;E854[23]^,OR,^;T436[029][14]A^,OR,^;29629000[56];^,OR,^;61803000;^,OR,^abdominal pain^,OR,^agitat^,OR,^aggitat^,OR,^aggressive^,OR,^altered mental status^,OR,^arrhythmia^,OR,^bad reaction^,OR,^bad trip^,OR,^bizz^,OR,^bizar^,OR,^bugs^,OR,^chest pain^,ANDNOT,(,^denies chest pain^,OR,^no chest pain^,)),OR,^chest pressure^,OR,^chest tight^,OR,^combat^,OR,^delusion^,OR,^delirium^,ANDNOT,^delirium tremen^,OR,^delirum^,ANDNOT,^delirium tremen^,OR,^diaphoretic^,OR,^disoriented^,OR,^dizz^,OR,^erra[td]ic^,OR,^feels bad^,OR,^feels weird^,OR,^fidg^,OR,^flight of ideas^,OR,^formication^,OR,^hallucinat^,OR,^hearing voices^,OR,^heart attack^,OR,^heart pap^,OR,^heart racing^,OR,^high blood pressure^,OR,^hyperv verbal^,OR,^incoh^,OR,^in[gj]est^,OR,^intoxic^,OR,^lightheaded^,OR,^manic^,OR,^nausea^,OR,^not feeling well^,OR,^not right^,OR,^not sleeping^,OR,^numb^,OR,^verdo[se][es]^,OR,^overose^,OR,^over dose^,OR,^palp^,OR,^parano^,OR,^poison^,OR,^racing heart^,OR,^restless^,OR,^seeing snakes^,OR,^seeing things^,OR,^shak^,OR,^shot up^,OR,^shoot up^,OR,^shooting up^,OR,^shoots up^,OR,(,^(,^shortness of breath^,OR,^short of breath^,)),ANDNOT,(,^denie[sd] short^,OR,^no short^,)),OR,^snort^,OR,^seiz^,OR,^sores all over^,OR,^picking at skin^,OR,^scratching^,OR,^sycho^,OR,^tach[iy]^,OR,^tingl^,OR,^tight chest^,OR,^tremulous^,OR,!tripping!,OR,^trouble sleeping^,OR,^twitch^,or,^vomiting^,OR,^violent^,OR,^weakness^,)),AND,(,^desoxyn^,OR,(,(!meth!,OR,^methamphetamine^,OR,^on mth^,)),ANDNOT,(,^meth recovery^,OR,^clean from meth^,OR,^rsh on mth^,OR,^meth gas^,OR,^history of meth^,OR,^stopped smoking meth^,OR,^stopped meth^,OR,^stopped using meth^,OR,^no meth^,OR,^deny meth^,OR,^denie[sd] meth^,OR,^quit meth^,OR,^meth germ^,OR,^meth gmt^,OR,^meth odist^,OR,^meth obstet^,OR,^meth group^,OR,^meth south^,OR,^seen at meth^,OR,^meth gtown^,OR,^went to meth^,OR,^meth north^,OR,^meth univ^,)),OR,(,!crank!,ANDNOT,(,^hand crank^,OR,^doctor crank^,OR,^using a crank^,)),OR,(,^(,^gram of ice^,OR,!on ice!,OR,!smoking ice!,OR,!smoked ice!,OR,!line of ice!,OR,!used ice!,OR,!using ice!,OR,!ingested ice!,OR,!ingesting ice!,OR,^admits to ice^,OR,!ice use!,OR,^in[gj]ect^ ice^,)),ANDNOT,(,^nose bleeding ice^,OR,^laying on ice^,OR,^bump on ice^,OR,^player on ice^,OR,^iceyhot^,OR,^using ice with no relief^,OR,^using ice with relief^,OR,^on ice with relief^,OR,^no ice used^,OR,^choked on ice^,OR,^ice heat^,OR,^spun around on ice^,OR,^hit face on ice^,OR,^fal on ice^,OR,^lost control on ice^,OR,^walking on ice^,OR,^de icer^,OR,^elevation ice^,OR,^using ice heat^,or,^landed on ice^,OR,^ice melt salt^,OR,^black ice^,OR,^chew^ice^,OR,^ice chip^,OR,^ice cube^,OR,^ice^f[ae]ll^,OR,^f[ae]ll^ice^,OR,^sli[pd]^ice^,OR,^spice^,OR,^appl^ice^,OR,^ice^appl^,OR,^ice pack^,OR,^ice cream^,OR,^ice bath^,OR,^ice coffee^,OR,^ice to area^,OR,^doctor ice^,OR,^smirnoff ice^,OR,^ice skat^,OR,^ice water^,OR,^ice cold^,OR,^pushed down on ice^,OR,^ice hockey^,OR,^head on ice^,OR,^ice patch^,OR,^bag of ice^,OR,^ice machine^,OR,^dry ice^,OR,^ibuprofen^,OR,^vehicle on ice^,)),OR,^overamping^,OR,(,!speed!,ANDNOT,(,^driver speed^,OR,^city speed^,OR,^fast speed^,OR,^dr speed^,OR,^fan speed^,OR,^residential speed^,OR,^slurred speed^,OR,^stand still speed^,OR,^unknown exact speed^,OR,^speed up^,OR,^up to speed^,OR,^car speed^,OR,^speed limit^,OR,^marked speed^,OR,^medium speed^,OR,^unknow speed^,OR,^normal speed^,OR,^changed speed^,OR,^full speed^,OR,^unkwon speed^,OR,^high speed^,OR,^highway speed^,OR,^MPH^speed^,OR,^speed^heart^,OR,^speed^MPH^,OR,^speed sign^,OR,^low speed^,OR,^moderate speed^,OR,^high speed^,OR,^nknown speed^,OR,^unsure of speed^,OR,^interstate speed^,OR,^practice speed^,OR,^speed process up^,OR,^walking speed^,OR,^speed unk^,OR,^speed bump^,OR,^rate of speed^,OR,^hwy speed^,OR,^unknown speed^,)),OR,(,^tweak^,ANDNOT,(,^tweak^ on left^,OR,^tweak^ on right^,OR,^tweaked^,OR,^tweak^ it^,)),),ANDNOT,(,^denie[sd] drug^,OR,^deny drug^,OR,^denying drug^,OR,^denie[sd] any drug^,OR,^jail clearance^,OR,!with draw!,OR,^withdra^,OR,^deto[xsz]^,OR,^dtox^,OR,^rehab^,OR,^wants refer^,)),)