

CDC Benzodiazepine Overdose (version 1)

Query purpose: To assist state, local, tribal, territorial, and federal public health practitioners in monitoring emergency department (ED) visits for suspected benzodiazepine overdoses.

How it was developed: CDC scientists first started developing the definition using lessons learned from jurisdictions funded by CDC's Overdose Data to Action and Enhanced State Opioid Overdose Surveillance programs. First, International Classification of Diseases, 10th Revision (ICD-10-CM) and 9th Revision Clinical Modification (ICD-9-CM), and Systematized Nomenclature of Medicine (SNOMED) diagnosis codes indicating acute benzodiazepine use and/or benzodiazepine poisoning were identified; this was followed by identifying and adding overdose terms that could be presented in the chief complaint free text. Finally, the team identified benzodiazepine terms indicating that benzodiazepine was involved in the overdose.

How it works: The Chief Complaint Discharge Diagnosis 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 (yes):
 - If a diagnosis code indicating a benzodiazepine poisoning is present, the ED visit is automatically included in the syndrome.
- Automatic inclusion (no):
 - If the ED visit does not include a diagnosis codes for benzodiazepine poisoning, then the visit is not automatically included.
 - The visit is captured only if it includes two components:
 - 1) chief complaint text indicating an overdose or poisoning and
 - 2) chief complaint text indicating benzodiazepine involvement or a SNOMED code for benzodiazepine dependence or misuse.
 - The list of exclusions is applied to the chief complaint text only when a discharge diagnosis code is not present for benzodiazepine poisoning.

For consideration: A large number of commonly used benzodiazepine types and names are included. The team attempted to identify most drug names used for benzodiazepines; however, it is likely that some drug names and slang terms should be added to the next version of the definition.

Table 1. Chief complaint and discharge diagnosis search terms for suspected benzodiazepine overdose (version 1)

Variable	Automatic inclusion?	Specific terms
<i>Inclusions</i>		
Discharge Diagnosis – ICD-9-CM poisoning	Yes	969.4, (also included code with no period - "9694")
Discharge Diagnosis – ICD-10-CM poisoning	Yes	T42.4X1A, T42.4X4A (also included codes with no period, e.g., "T424X1A")
Discharge Diagnosis – SNOMED	Yes	216530001, 296053004, 296128004, 296129007, 712742003, 81914009

Chief complaint – overdose term	No, include only if other benzodiazepine-related terms are also present	Poisoning (poison) Overdose (overdose, overdoes, averdose, averdoes, over does, overose) Nodding off Snort Ingestion (ingest, inject) Intoxication (intoxic) Unresponsive (unresponsiv) Loss of consciousness (syncope, syncope) Shortness of breath (SOB), short of breath Altered mental status (AMS)
Chief complaint – benzodiazepine term	No, include only if other overdose-related terms are also present	prosom, niravam, tranxene, oxazepam, byfavo, flurazepam, Dalmane, downers, Xanax (with slang terms: xanny, xannies, xans, xan bars), Z bars, K Pin, Phennies, BZD, roofies, benzodiazepine, benzo, benzos, benezos, clorazepate, diazepam, clonazepam, midazolam, alprazolam, temazepam, alprazolam, helex, frankimazin, onax, alprox, misar, restyl, tafil, frontin, librium, solanax, klonopin, valium, iktorivil, paxam, rivatril, antenex, apaurin, apzepam, apozepam, hexalid, normabel, pax, ronol, vival, stesolid, stedom, valaxona, hipnosedon, vulbegal, fluscand, flunipam, rohydorm, hypnodorm, loraz (for lorazepam misspellings), ativan, zolam, bromazepam, diazepoxide, zolam, serax, temazepam, restoril, halcion
Discharge Diagnosis – SNOMED	No, include only if other overdose-related terms are also present	231473004, 428406005
Exclusions		
Chief complaint	Exclude	Prescribed or given benzodiazepine by a medical professional. See list below in ESSENCE code

Table 2. ESSENCE query for suspected benzodiazepine overdose (version 1)

(,^[/]969.4[/]^,or,^[/]9694[/]^, or,^[/]T42.4X[14]A[/]^,or,^[/]T424X[14]A[/]^,or,^[/]296128004[/]^,or,^[/]216530001[/]^,or,^[/]296129007[/]^,or,^[/]296053004[/]^,or,^[/]712742003[/]^,or,^[/]81914009[/]^),or,(,(,^poison^,or,^verdo[se][es]^,or,^overdose^,or,^overose^,or,^nodding^,or,^nod!,or,^snort^,or,^in[gj]est^,or,^intoxic^,or,^unresponsiv^,or,^loss of consciousness^,or,^syncop^,or,^shortness of breath^,or,^short of breath^,or,^altered mental status^),and,(,!prosom!,or,!niravam!,or,!tranxene!,or,!oxazepam!,or,!byfavo!,or,!flurazepam!,or,![zx]ans!,or,![zx]anny!,or,![zx]annies!,or,!dalmane!,or,!downers!,or,![zx]an bar!,or,![zx]anbar!,or,!z bar!,or,!k pin!,or,!phennies!,or,!B[ZD][ZD]!,or,!BZ!,or,!roofies^,or,^benzos^,or,^benzodiazepine^,or,^benezos^,or,^clorazepate^,or,^diaz[aei]pa[mn]^,or,^clonazepam^,or,^midazolam^,or,^alprazolam^,or,^alprazolam^,or,^xan^,or,^xan^,or,^Xanax^,or,^ [zx]an[oae]x^,or,^helex^,or,^frankimazin^,or,^lonax!,or,^alprox!,or,^misar!,or,^restyl!,or,^tafil!,or,^frontin!,or,^librium!,or,^solanax^,or,^ [ck]lon[ae]z[ea]p[ea]m^,or,^ [ck]lon[iao]pin^,or,^valium^,or,^valum^,or,^iktorivil^,or,^paxam^,or,^riv[oa]tril^,or,^antenex^,or,^apaurin^,or,^apzepam^,or,^apozepam^,or,^hexalid^,or,^normabel^,or,^pax!,or,^ronal!,or,^lival!,or,^stesolid^,or,^stedon^,or,^valaxona^,or,^hipnosedon^,or,^vulbegal^,or,^fluscand^,or,^flunipam^,or,^rohydorm^,or,^hypnodorm^,or,^loraz^,or,^lativan!,or,^zolam^,or,^bromazepam^,or,^diazepoxide^,or,^serax^,or,^temazepa[nm]^,or,^restor[aei]l^,or,^halcion^,or,^[/]428406005[/]^,or,^[/]231473004[/]^),andnot,(,^ plan to overdose on benzo^,or,Plan to overdose on benzo^,or,!plan to overdose on [zx]an[oae]x!,or,!plan to overdose on
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Ativan!,or,!plan to overdose on valium!,or,^ xanthogranulomatous ^,or,!acetazolamide!, or,^placed on
ativan^,or,^placed on valium^,or,^placed on [zx]an[oae]x^,or,^ran out of ativan^,or,^ran out of valium^,or,^ran out of
[zx]an[oae]x^,or,^ativan prn^,or,^valium prn^,or,^[zx]an[oae]x prn^,or,^treated by ativan^,or,^treated with
ativan^,or,^given ativan^,or,^gave ativan^,or,^ativan given^,or,^treated by valium^,or,^treated with
valium^,or,^treated by [zx]an[oae]x^,or,^treated with [zx]an[oae]x^,or,^given valium^,or,^gave valium^,or,^valium
given^,or,^[zx]an[oae]x given^,or,^given [zx]an[oae]x^,or,^gave [zx]an[oae]x ^,or,^rec[ie][ei]ved ativan^,or,^does not
have any ativan left^,or,^does not have any valium left^,or,^does not have any [zx]an[oae]x left^,or,^stopped using
valium^,or,^stopped using [zx]an[oae]x^,or,^stopped using ativan^,or,^out of valium^,or,^out of [zx]an[oae]x^,or,^out
of ativan^,or,^benzonatate^,or,^no loss of consciousness^,or,^denie[sd] loss of consciousness^,or,^negative loss of
consciousness^,or,^denies any loss of consciousness^,or,^denies drug^,or,^deny drug^,or,^denied drug^,or,^denying
drug^,or,^denies any drug^,or,^ with dra^,or,^withdra^,or,^detoxification^,or,^detos^,or,^detoz^,or,^dtox^,,),)

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