

SA and SI Annotation Guidelines

This project aims to annotate instances of **suicide attempt (SA)** and **suicide ideation (SI)** as defined by the CDC: <https://www.cdc.gov/nchs/data/nhsr/nhsr108.pdf>. Only suicide attempts by the patient that the document refers to are annotated. Any mentions of attempts or ideations by other individuals, including family members, are not annotated.

Note:

- Document here refers to a single text file that represents all the EHR notes for a particular hospital-visit concatenated together. So classifying a document represents classifying a hospital-stay.
- The blue highlight represents an SA annotation, the green represents SI and the blue-green represents both. This red represents what not to annotate.

Annotations are given at the sentence level, but a review of the entire document is needed to begin annotating. There are three classes of documents (hospital-stays) that are possible: SA, Not SA and Not Suicide Related. The first step is to determine the class of document that you have.

Determining if a suicide occurred in this document:

Read or skim the entire document, looking for key phrases that will help determine what occurred.

1. SA:

- a. Chief complaint or diagnosis is "Suicide Attempt"
- b. Patient admits or staff conclude that the event that led to the hospitalization was intentional or suicidal in some way.
- c. Clues that can be taken as evidence for a SA:
 - i. Self-inflicted stab
 - ii. Patient taking numerous pills at a time
 - iii. Numerous empty pill bottles
 - iv. An attempted hanging
 - v. Intentionally ingesting deadly chemicals
 - vi. Suicide notes
- d. Some documents are quite vague or have conflicting verbiage on whether the patient attempted suicide or not. For these, try to use the later evidence over earlier evidence. For example, take the psych notes over police reports since psych notes occur later on in the hospital stay and are usually the final verdict. Otherwise, use your best judgement if conflict exists.
- e. Note that if it's still unclear whether or not a SA occurred, then the document will be treated as a SA with the category property set to "unsure".

2. Not SA:

- a. For this conclusion, somewhere in the document there must be a conclusion that the patient definitely did not attempt suicide or the patient adamantly denies a SA and the hospital staff believe them. Only these sentences are annotated with the category set to N/A. All other references to the event that led to the hospitalization are ignored. SIs and past SAs are annotated as normal.
 - i. “The psych work determined this not to be suicide”
3. **Not Suicide Related:**
 - a. No where in the document is SA mentioned or even alluded to. These documents are not annotated at all.

Sentence-level annotations

1. Always annotate the **entire sentence**, even if only a small portion of it references SA or SI.
2. If a sentence refers to multiple methods of SA make two separate annotations on the same sentence.
3. Do not include periods in annotation.
4. Do not include numbers or letters from lists.
 - a. For example: “1. Aspirin overdose”: “1. “ would not be selected in the annotation segment.
5. Don’t include headers unless they mention SA or SI in them, treat them as their own sentence.
 - a. For example: “ASSESSMENT/PLAN - 19 y/o female with h/o depression, s/p drug overdose as suicide attempt, s/p intubation for airway protection”
 - b. And: “3. SI: 1:1 sitter and psych consult, pt upset that he did not succeed with suicide attempt, admit to psych, all TCAs and sedatives held”
6. Sometimes, the sentences are missing periods, so use your best judgement to infer where the sentence ends. Line breaks, capitalized words and changes in topic are good indicators for this.
 - a. For example: “26yo female admitted s/p fall feet into river
No significant events overnight...”

Suicide Attempt (SA)

Any intentional self-harm as described by the [ICD-10 codes from the CDC](#). Once it has been determined that this document references a SA or there is a possibility that a SA has occurred, the document is annotated at the sentence level. These sentence level annotations will all have the same category if the sentence refers to the current time period. For example, if it’s determined that the SA was by tylenol overdose, then all references to “suicide attempt”, “overdose” or “taking pills” will be annotated with the category “T36-T50”.

Mentions to past attempts can have any category. If the hospital staff are unsure if the patient attempted suicide or if the evidence is insufficient, then the category is “unsure” for every current time period annotation, no matter what the method was (overdose, fall, etc).

Category

ICD-10 code ranges associated with the SA. The ICD-10 codes are grouped into ranges by their similarity. Please refer to the table below from the [CDC website](#) for descriptions of each code range. They are as follows:

1. T14.91
2. T36-T50
3. T51-T65
4. T71
5. X71-X83
6. Unsure
7. N/A

Table. ICD-10-CM codes for identifying suicide attempts and intentional self-harm

Intentional self-harm due to:	Code range
Drowning/submersion, firearm, explosive material, fire/flame, hot vapors/objects, sharp object, blunt object, jumping from a high place, jumping or lying in front of a moving object, crashing of motor vehicle, other specified means	X71-X83
Poisoning by drugs, medications and biological substances	T36-T50 with the 6th character of the code = 2 (except for T36.9, T37.9, T39.9, T41.4, T42.7, T43.9, T45.9, T47.9, and T49.9, which are included if the 5th character of the code = 2)
Toxic effects of nonmedicinal substances	T51-T65 with the 6th character of the code = 2 (except for T51.9, T52.9, T53.9, T54.9, T56.9, T57.9, T58.0, T58.1, T58.9, T59.9, T60.9, T61.0, T61.1, T61.9, T62.9, T63.9, T64.0, T64.8, and T65.9, which are included if the 5th character of the code = 2)
Asphyxiation, suffocation, hanging	T71 with the 6th character of the code = 2
Suicide attempt	T14.91

Every annotation in the document should have the same category property, with the exception of annotations of SI and past SA. For instance, if a document describes a patient who intentionally overdosed, then all references to “suicide attempt”, “overdose” or “ingestion” should be annotated with category T36-T50.

The “unsure” value is a special case. If the annotator determines the SA to be “unsure”, then they annotate as they normally would, except they use the “unsure” category for all their annotations (SI and past SA are annotated as normal, these are not changed). The method of possible SA (the ICD-10 code range) is not recorded in these cases.

Examples for each category are listed below. Note that for **all** of the following examples, it is assumed that the event being annotated (and thus the document) has been determined a SA or at least is “unsure”.

T36-T50

Some examples of this category are listed below:

“You were admitted with a polysubstance overdose”

“Tylenol ingestion”

“She took a “whole bottle of tylenol, >100” at 11pm on [**8-29] because she was feeling “flu like symptoms””

“His daughter later found empty pill bottles in the basement where he was found with 40 pills of Seroquel missing, 22 pills of Diovan missing, 33 pills of Lipitor missing and ~15 pills of Glucophage missing“

- In addition to overdose references, any significant clues to overdose are also annotated. Such as mentions of missing pills or empty pill bottles are annotated.

“Another concern was seroquel, of which patient states she took 12 tablets”

- If the patient had a multi-drug overdose, mentions of any of the medications that they took are annotated, no matter how few pills.

“I only took two this morning”

- Would label this since it refers to her taking the medication (that we know she overdosed on), even though the patient is lying about the dosage.

“Sometimes patients admit to taking pills but only admit to taking a few or a reduced dose”

- This is annotated since the action of taking the pills is mentioned, even if the details are changed or remembered incorrectly.

“Ms. [**Known lastname **] is a 48-year-old woman with extensive psychiatric disease now presenting with fulminant hepatic failure status post acetaminophen toxicity”

- Don't annotate these kinds of references, as they only refer to the effect of the event, not the event itself.

“substance abuse”

- These references are not annotated.

T51-T65

Some examples of this category are listed below:

“battery ingestion”

“MH significant for depression admitted after ingesting approximately 100gms of borate in Zap-a-Roach, with EtOH level in 200s”

“PT drank 2L of antifreeze around 6pm, vomited X4 and EMS was called”

T71

Some examples of this category are listed below:

“Hung themselves”

“found hanging”

X71-X83

This category consists of a few different types. Some examples of this category are listed below:

Self stabbing examples

“Self inflicted stab wound”

“s/p stabbing”

“Per report, patient stated that he “fell on the kitchen knife.””

- Annotate since this refers to the action of falling.

“Presented with stab wounds”

“Shortly after this, she found him in the backyard with the knife in his chest”

“Wrist laceration”

- Don't annotate these kinds of references, as they only refer to the wound or effect of the action, not the action itself.

Self inflicted gunshots

"s/p Self inflicted gunshot wounds to face"

"Was at a party on [***] and, per EMS report, fired a single shot to the head from a handgun"

"44 year old female status post gunshot wound to right eye"

- Only actions or "self inflicted" wounds are annotated.

Jumping examples

"25 year old man s/p fall x70ft"

"S/P [**2113**]0 feet"

- This is an error in the document and is not annotated because we shouldn't assume what we think it says.

"25 year old man with s/p multiple trauma"

- This would not be annotated since it does not explicitly refer to the SA, only effects of it.

MVC

"56 yo F s/p single car MVC with significant damage to passenger side of vehicle. Pt has history of depression, was found with multiple pill bottles in the car, as well as a suicide note."

- This document consisted of a double attempt: purposeful motor vehicle crash and purposeful overdose. The first sentence would be X71-X83 and the second would be T36-T50. Within this document, any sentences that don't mention these explicitly, but rather just states "suicide attempt" will be annotated twice: one with T36-T50 and the other X71-X83.

Drowning

"30 year old male s/p near drowning"

"The patient admitted that this was a suicide attempt and thus psychiatry was consulted"

- These come from the same document and confirm that the patient drowned themselves on purpose. All references that referred to the drowning would be annotated.

Unsure

This category is unique in that it does matter how the patient ended up in the hospital, rather this value depicts that this SA is unsure. Reasons for this include: the hospital staff is unsure of the patient's intentions, the patient's denial has some validity or there isn't enough evidence for a hard conclusion. A history of SAs coupled with a questionable overdose usually lead to an "unsure" classification.

The following are examples of sentences that provide clues that the hospital-stay category would be "unsure":

"Questionable suicide attempt"

"He was subsequently reevaluated after leaving ICU and adamantly denied any SI or suicide attempts"

- Note that a SI annotation with status: absent would also be present here.

"This is a 28 year old male with a hx BPD/depression with + hx SI, polysubstance abuse who was found down at home, pulseless today for 40 minutes"

- This clue led to an “unsure” category termination for one of the documents, however this specific sentence was not annotated as a SA. Other sentences in the same document that referred to the actual event with verbiage like “may have OD on opiates” are annotated as SA with category: unsure.
- Note also that this sentence is annotated with SI: present as he has a history of SI.

“42 year old man that entered the EW this am and stated that he had taken cocaine, alcohol and ?? seroquel”

- In this document, the patient has a history of SAs via medication which led me to conclude that this document is “unsure. Thus this sentence and other mentions of his overdose are annotated as “unsure”.

“She denied that it was intentional and had no thoughts of hurting herself”

- In this document, the staff suspected a possible SA but it was never diagnosed as such. Due to that and this sentence here, “unsure” in the appropriate classification.

T14.91

This category means a general SA. It’s never used to annotate the current SA at hand. It’s used when there is a history of patient suicide that is not elaborated on.

Past SAs

SAs that have happened in the past are annotated as well. The category can have any value.

“... with history of previous suicide attempt, presenting with...”

- category: T14.91

“Past Medical History:

- Multiple suicide attempts in past - (T14.91)
- 5-6 times with overdose, intubated 3 times in ICU - (T36-T50)
- Most recently in [**2122-5-15**] at [*Hospital 882**] for overdose“- (T36-T50)

“He has a history of multiple suicide attempts, including an overdose of zyprexa”

- This one has two annotations:
 - T14.91 for the first and T36-T50 for the second

Suicide Ideation (SI)

Relating to any indication of wanting to take one’s own life or harm oneself.

Includes SI from the present hospital admission and the past.

Present

Patient admits to some SI, the hospital staff makes a note of it or a family member or friend mentions that the patient expressed it to them.

“Pt expressed to EMS that she “wanted to die””

“History of suicide ideation”

“Passive suicidality”

“He told the woman he lives with he would like to jump in front of a car, but did not want to upset the driver”

"A voice told him to take these pills, after using cocaine"

Absent

SI is negative. Staff concludes the patient has no SI or the patient denies it. Even if the patient attempted suicide, denying SI would result in status: absent.

"She has no current suicide ideation"

"When Asked if he might do such a thing again he answers, "I believe that I wouldn't"

Multiple Annotations

Multiple annotations on the same sentence are possible. Here are some examples.

"44-year-old gentleman with a history of alcoholism and suicidal ideation who presents with intentional overdose of ? gabapentin +/- other medications (seroquel, thorazine, clonidine...)"

- SA: category: T36-T50
- SI: status: present

"She denied suicidality but she had one prior suicide attempt by overdose"

- For context, this document was deemed "unsure"
- In this sentence, the wording "she denied suicidality" is vague, it could mean she denied that she tried to commit suicide or that she denies any current SI. It could mean either or even both. There's also a mention to a past SA by overdose. For this I would give the following annotations:
 - SA: category: unsure
 - SI: status: absent
 - SA: category: T36-T50

Below is a special case where a patient attempted suicide with two separate methods, overdose and cutting his wrists (with intent to kill himself, not just injure himself). In this case and others, both attempts are annotated. The following three sentences are all from this document:

"Apparently, the patient called his estranged wife saying he wanted to harm himself by overdosing on his medications and cutting his left wrist"

- SA: both T36-T50 and X71-X83

"1) Aspirin Overdose: The patient presented with an aspirin level>5-, which increased to 84."

- SA: category: T36-T50
- This only refers to the overdose SA, not both.

"Given death was a result of a suicide attempt the case was accepted by the medical examiner who will perform an autopsy"

- SA: both T36-T50 and X71-X83
- Here, the words "suicide attempt" refer to both the patient's overdose and their wrist cutting, so two annotations are made.

Miscellaneous notes

- If a sentence has small spelling errors or one missing word but you can still clearly read what was trying to be written, then interpret and annotate as normal. However if it's too ambiguous then don't assume too much and skip the annotation if need be. For

example, this following is obviously missing the word “ingestion” or “overdose” or a similar word after glycol, so go ahead and annotate it.

- “54 year old man with ethylene glycol, now intubated”
- If there is no clear sentence ending, or if a sentence spans an entire paragraph but is separated by , and ; then treat the , or ; as periods.
 - “Pt admitted with suicide attempt by ingestion of anti-freeze; admitted from OSH intubated, acidotic; on HD for brief period to clear metabolites of ethylene glycol; head CT negative for bleed/edema; HCT drop from 40 on admission to 24.7 with no source of bleeding, transfused 2 units...”
- Two SAs are possible within one document. For example:
 - “She first tried slitting her wrists but this did not work so she took 50 aspirin tablets. (two annotations, X71-X83 and T36-T50).
 - Within this context, any mentions to “suicide attempt” would have two annotations, X71-X83 and T36-T50.
 - However this sentence, “The patient took approximately 50 pills of 325 mg aspirin” would just be labelled as T36-T50 since it only refers to the overdose SA and not to both of them.