



Nonfatal Child Abuse and Neglect (CAN) Hospitalizations

Purpose:

To obtain counts and rates for health care visits with a child abuse and neglect (CAN) ICD-10-CM code. Counts are based on hospitalizations and not unique patients. Counts will focus on incidence (initial encounters for active treatment). For a list of CAN specific codes and proxy codes, see the *Numerator* section below (specifically Tables 1 and 2).

Value/potential use of health visit data for reporting of CAN and understanding the issue:

- Monitor trends and obtain information on CAN injuries (visit-level data) requiring and seeking medical care.
- Compare with rates of survey data, crime reports, and/or Child Protective Services (CPS) data on CAN.
- Analyze trends and differences in seeking health care for CAN injuries by subpopulations.

Background Information:

The complex nature of this injury and reporting to health care necessitates caution with interpretation of data:

- Not all who experience CAN will appear in a health care setting; this may be especially true for children experiencing neglect.
- Reliance on inpatient hospital stays alone underrepresents the overall CAN burden as it excludes other healthcare providers/sources, such as emergency departments, urgent care, primary care practice, and other clinical settings delivering health services to children (such as local health departments).
- The degree to which children are seen in the hospital setting and CAN is recognized and documented is unknown. First, this could be due to parental or caregiver distrust of the medical system; reluctance to report their (parent/guardian, other family member, or acquaintance) behavior; lack of awareness of child's vulnerability and risk of exposure to CAN; fear or shame of recognition or reporting (regardless of whether or not CAN is present); or other personal reasons. Second, providers' attitudes, beliefs, and personal knowledge/experience may hinder CAN reporting, such as: inability to collect sufficient evidence or information to confirm CAN; perception that the injury is minor; unfamiliarity with how contusions present on different skin types (for instance, these may not appear as readily on children with darker skin); time commitment from paperwork to court proceedings is considered burdensome; worry that reporting will result in the removal of child from the home or will increase a child's CAN risk; biases/assumptions that the population being served does not perpetrate CAN; and/or beliefs that Child Protective Services is ineffective. Additionally, certain health care settings may be more or less likely to recognize and document CAN based on reasons that may disproportionately impact certain populations. For instance, bias towards populations with risk factors for CAN (e.g., families with history of drug misuse or frequent interactions with law enforcement) may result in over-reporting, including situations that do not represent CAN. Personal and institutional racism may also play a role in documenting and reporting CAN for certain populations and not others.



- Based on the above listed limitations of health care data as an indicator of CAN, it should be considered in combination with other sources to fully appreciate and understand the scope of this public health issue. It is likely an undercount of CAN injuries and should be understood as such. A call to action for health care providers suggests the need to look for signs of CAN among their patients, ask questions in a sensitive manner, consider one's own biases and mediate these, and provide appropriate assistance and/or reporting.

Workgroup Data Results:

CAN workgroup members provided state data on hospitalizations as a starting point for review. Data were provided based on current injury subset methodology (principal diagnosis of injury; “any mention” in a diagnosis or e-code field of CAN; see <https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Nonfatal%20Hospitalizations%20for%20All%20Injuries.pdf>) and an expanded subset (following the ED subset methodology which reviews all diagnosis and external cause codes for any mention of injury; see <https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Nonfatal%20Emergency%20Department%20Visits%20for%20All%20Injuries.pdf>).

Data from six states were reviewed and compared. An increase in rates from 16-160% among the participating states (average of 62% increase in age-adjusted rate of CAN) was noted when using the expanded injury hospitalization dataset (compared to the dataset restricted to principal diagnosis of injury). Younger age groups were more significantly impacted by the use of the expanded methodology compared to older age groups. Significant differences in types of abuse based on the expanded injury subset were noted as well. Specifically, sexual abuse, psychological abuse, and neglect cases increased; these added cases most often had an F code noted as principal diagnosis (mental, behavioral, and neurological disorders).

The workgroup reviewed use of several specific CAN codes (see Table 1) and proxy codes (see Table 2):

- Shaken Infant Syndrome (T74.4): this was an infrequently used code for the six states providing data. Its infrequent use may be due to preference given to T74.12 or T76.12 (physical abuse) and often in combination with a code noting a traumatic brain injury (TBI).
- Types of abuse (physical, sexual, psychological, unspecified and neglect) were also reviewed. Five out of six states saw large increases in non-physical abuse when comparing the restricted injury dataset to the expanded injury dataset while one state remained fairly consistent in terms of distribution of abuse.
- There were significant differences between states regarding use of confirmed versus suspected CAN codes. Additionally, these differences may also be seen across health care systems within the same state or jurisdiction. Furthermore, perpetrator code usage (Y07) is not consistent across or within jurisdictions. Guidance around the use of the Y07 code is restricted to confirmed cases of CAN only, which limits how frequently this code is used based on the distribution of suspected versus confirmed cases (though some states reported minimal use of the Y07 code for suspected CAN as well). There may be a variety of reasons health care providers do not use the Y07 code when indicating confirmed CAN; the same hesitancy has been noted when reporting confirmed sexual abuse/violence of adults.
- The CAN workgroup reviewed additional ICD-10-CM codes thought to be associated with, or



highly indicative of CAN. Workgroup participants discussed research articles and data from their own states related to the use of proxy codes and sentinel injuries as indicators of CAN. A director of a hospital CAN review board and CAN pediatrician were consulted for advice on findings from the field and codes most likely to result in determination of CAN and follow-up with CPS or law enforcement. A list of proxy codes are provided below in Table 2 and are limited to specific age groups (often based on injuries that should not be present with a non-cruising child). Inclusion of these codes in a CAN hospitalization indicator will impact the younger ages (specifically those under 2 years) most significantly. These proxy codes are not exhaustive but are meant to include instances most likely representative of CAN. These are to be used to query the overall expanded injury dataset and include visits that have one or more of these codes and no corresponding CAN code.

Methods:

Numerator:

- All nonfatal hospitalizations with any of the ICD-10-CM diagnosis or external cause of injury codes listed in the tables below in **any** field.
- This indicator will use a subset of data created by applying the ED injury subset methodology (any mention of injury in a diagnosis or e-code field, initial encounter only). To create the injury subset, see: <https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Nonfatal%20Emergency%20Department%20Visits%20for%20All%20Injuries.pdf>. The inclusive nature of this subset captures all mention of CAN except for subsequent (D in the 7th character) and sequelae (S in the 7th character) encounters.

Table 1: Codes* for Nonfatal CAN** Visits

Code	Description
T74.02	Child neglect or abandonment, confirmed
T74.12	Child physical abuse, confirmed
T74.22	Child sexual abuse, confirmed
T74.32	Child psychological abuse, confirmed
T74.92	Unspecified child maltreatment, confirmed
T76.02	Child neglect or abandonment, suspected
T76.12	Child physical abuse, suspected
T76.22	Child sexual abuse, suspected
T76.32	Child psychological abuse, suspected
T76.92	Unspecified child maltreatment, suspected



T74.4	Shaken infant syndrome
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*7th character of A or missing (reflects initial encounter, active treatment).

**Human trafficking codes (T74.52, T74.62, T76.52, T76.62) added in the fourth quarter of 2018 were excluded, as these are considered different types of child injury compared to the CAN codes detailed here. Further review of these codes will be necessary once these have been in use for a few years.

In addition to the above CAN specific codes, our workgroup suggests using the following codes as proxies and include in the numerator count. We recommend that each state or jurisdiction review the following data for their area to assess appropriateness for inclusion. The injury subset (that is, a subset of nonfatal hospitalizations with an injury code in any diagnosis or e-code field; see details under **Numerator** section above) should be reviewed for these codes (initial encounters only) among visits with no other CAN-specific code as noted in Table 1 above.

Table 2: Proxy Codes* for Nonfatal CAN Visits (in absence of any Table 1 codes noted in the visit record)

Code	Description
S01512	Frenulum tear ; restrict to age <6 months old (if state/jurisdiction data do not allow for this specificity, restrict to age <1 year old**)
S065	Subdural hemorrhage ; restrict to age <2 years old (without co-occurring unintentional motor vehicle traffic—MVT--code; see: https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Nonfatal%20Unintentional%20Motor%20Vehicle%20Traffic-related%20(MVT)%20Hospitalizations-UPDATE-2-28-20.pdf)
See: https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Proposed%20TBI%20Case%20Definition%20Diagnosis%20Codes--Nonfatal%20Hospitalizations.pdf	TBI ; restrict to age <6 months old (if state/jurisdiction data do not allow for this specificity, restrict to age <1 year old**) (without co-occurring unintentional MVT code; see: https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Nonfatal%20Unintentional%20Motor%20Vehicle%20Traffic-related%20(MVT)%20Hospitalizations-UPDATE-2-28-20.pdf)
S72301, S72302, S72401, S72402, S72001, S72002	Long bone break ; restrict to age <1 year old (without co-occurring unintentional MV traffic e-code; see: https://resources.cste.org/ICD-10-CM/Gen%20Injury%20Indicators/Nonfatal%20Unintentional%20Motor%20Vehicle%20Traffic-related%20(MVT)%20Hospitalizations-UPDATE-2-28-20.pdf)



H33	Retinal detachments and breaks; restrict to age <1 year old
H3560, H3561, H3562, H3563	Retinal hemorrhage; restrict to age <1 year old
S62, S92	Feet or hand bone break; restrict to age <1 year old
S30-S32, S34-S36, S39	Genital injury; restrict to age <2 years old
S100, S300, S301, S303, S0003, S0010, S0011, S0012, S0033, S0083, S0093, S0510, S0511, S0512, S1083, S1093, S2000, S2001, S2002, S2020, S2021, S2090, S3021, S3022, S3023, S3732, S3994, S5001, S5002, S5011, S5012, S6000, S6010, S7000, S7001, S7002, S7010, S7011, S7012, S8000, S8001, S8002, S8010, S8011, S8012, S9000, S9001, S9002, S9030, S9031, S9032, S00431, S00432, S00439, S00531, S00532, S20212, S20219, S20221, S20222, S20229, S30201, S30202, S40011, S40012, S40019, S40021, S40022, S40029, S60011, S60012, S60019, S60021, S60022, S60029, S60031, S60032, S60039, S60041, S60042, S60049, S60051, S60052, S60059, S60111, S60112, S60119, S60121, S60122, S60129, S60131, S60132, S60139, S60141, S60142, S60149, S60151, S60152, S60159, S60211, S60212, S60219, S60221, S60222, S60229, S90111, S90112, S90119, S90121, S90122, S90129, S90211, S90212, S90219, S90221, S90222, S90229	Bruise or contusion; restrict to age < 6 months old
T2105^, T2106^, T2107^	Genital burn; restrict to age <1 year old
H1130, H1131, H1132	Infant hemorrhage; restrict to age 2 months to <7 months old

*7th character of A, B, C or missing (reflects initial encounter, active treatment).

^7th character of A or missing (reflects initial encounter, active treatment).

** If a state/jurisdiction needs to expand the restriction age, the use of these codes as proxies for CAN will lose some specificity/certainty that CAN *should* have been coded in these instances. The potential impact could significantly overestimate CAN health care visits. For instance, one state that could not restrict to children <6 months had to adjust and restrict to <1 year old. This state found that counts for TBI were more than double that of three other states providing data (these comparison states were able to restrict to <6 months). Three of the four states providing proxy code data saw the majority of



additional cases were due to a TBI code in the record without a CAN code.

Denominator:

- Midyear population for children under 18 years of age for the calendar year under surveillance obtained from the U.S. Census Bureau or suitable alternative.

Measures of frequency:

- Annual number of inpatient hospital stays, by age group and sex.
- Annual age-adjusted rates, overall and by sex, standardized by the direct method to the year 2000 standard U.S. population

Period for case definition:

- Calendar year based on date of discharge.

Indicator notes:

- See notes throughout this document.

Limitations of visit data:

- Counts/rates among subpopulations should be interpreted with caution as these may not reflect lower or higher incidence but rather other personal or institutional differences in terms of health care seeking behaviors and identification/documentation of CAN by providers:
 - It is unknown how many children with CAN injuries seek health care. Differences in health care usage by demographics is also unknown though it is assumed that certain populations may be more or less likely to present in health care settings based on income, accessibility, insurance status, cultural barriers, distrust, and/or the availability of or proximity to alternative services.
 - Responses by health care staff may also impact CAN identification and documentation. Differences in health care processes for interviewing, documenting, and follow-up are unknown and may affect quality and completeness of data coding. Personal or institutional biases of providers and agencies may lead to under-reporting or over-reporting for certain patient populations.
- The percentage of CAN injuries reporting to inpatient hospitals versus another type of medical care (urgent care, primary physicians, or other options) is unknown. Data on nonfatal ED visits may be reviewed in combination with the hospitalization indicator in some jurisdictions.
- This indicator is based on the codes used in the diagnosis and e-code fields only. No other descriptive fields related to the condition, cause of concern, or primary medical complaint is reviewed for validation purposes. Therefore, we are unable to calculate sensitivity and specificity for the approaches or proxy recommendations.
- CAN indicators in ICD-10-CM are not comparable to those in ICD-9-CM, so trend analysis based on hospitalization data should be restricted to 2016 and after.

Alternative or Additional Data Sources:

Other sources of data should be considered, reviewed and analyzed in combination with health care visit data.

This document was developed as part of the CSTE ICD-10-CM Injury Surveillance Toolkit.



- Health care discharge data: State or jurisdiction ED visits can provide additional incidence data to describe CAN burden. Based on data shared by three jurisdictions across the U.S., the counts and rates based on ED visits with a CAN code are much greater than hospitalizations. The CAN and proxy codes described within this document can be applied to ED visit data to establish ED counts and rates. Additionally, if feasible, presenting ED data and hospitalization data together can provide a more comprehensive description of CAN for injury surveillance.
- National Syndromic Surveillance Program (NSSP): Electronic data (emergency departments, urgent and ambulatory care centers, inpatient healthcare settings, and laboratories) are integrated into a shared platform as early as 24 hours after a patient's visit to a participating facility in order to assess and monitor public health trends. Through the NSSP Community of Practice and CDC, a suspected CAN syndromic surveillance definition was developed that can be used to search the dataset. Not every health care facility or state/jurisdiction submits data to NSSP.
- Child Protective Services (CPS) Report: These data may be available at the state or jurisdiction level per the Federal Child Abuse Prevention and Treatment Act. Laws mandating child maltreatment reporting vary by state or jurisdiction among professionals and institutions. Additional information on CPS Reports can be found within your state or jurisdiction's statutes, agency regulations, case laws, and other procedures. These reports provide data on substantiated and unsubstantiated CAN cases by population demographics and types of abuse.
- Federal Bureau of Investigation (FBI) Crime Data Explorer: This dataset provides law enforcement crime statistics reported to the FBI, derived from the National Incident-Based Reporting System (NIBRS) and Summary Reporting System (SRS). The national database reports counts of offenses, not unique victims (for instance, there may be multiple offenses perpetrated against one victim/survivor). See: <https://crime-data-explorer.app.cloud.gov/pages/home>.
- National Child Abuse and Neglect Data System (NCANDS): This is a voluntary national data collection and analysis program of state child abuse and neglect information based upon data received from all 50 states, the District of Columbia, and the Commonwealth of Puerto Rico. Data are obtained from Child Welfare reports and provide another source of information to compare with health care data and describe the overall burden of CAN. See: <https://www.acf.hhs.gov/cb/research-data-technology/reporting-systems/ncands>. You can query the Child Welfare Outcomes Report Data by state: <https://cwoutcomes.acf.hhs.gov/cwodatasite/byState>. To review the Child Maltreatment Reports, see: <https://www.acf.hhs.gov/cb/data-research/child-maltreatment>.
- National Survey for Children's Health: This is a national survey sponsored by the Maternal and Child Health Bureau's Health Resources and Services Administration. Data are provided at the state, regional, and national level on key measures of child and family physical and mental health and well-being. Data are reported by the parent/guardian. These data can be used in combination with CAN data to describe risk and protective factors experienced by children. This survey does not, however, include information on abuse or neglect. See: <https://www.childhealthdata.org/>.
- National Violent Death Reporting System (NVDRS): This is a state-based surveillance system that includes more than 600 unique data elements from multiple sources



(coroner/medical examiner, law enforcement (LE), and family/friends interviewed by LE) into a de-identified database that covers all violent deaths (including overdoses). NVDRS operates in all 50 states, the District of Columbia, and Puerto Rico. CAN may be identified as cause of death, indicated as contributing to death (e.g., CAN led to suicide), and/or it could be a part of the decedent's history. See: <https://www.cdc.gov/violenceprevention/datasources/nvdrs/index.html>.

- Data linkages conducted with state (or other local) datasets: When possible, this may provide the ability to assess multiple sources of data and combine information to create more accurate CAN estimates. For example, in some states, it is possible to link CPS data with hospitalization discharge and ED visit datasets. By doing so, additional analyses are possible to assess which populations of children are seen and documented in a health care setting only, which are seen and documented in CPS only, and which children are present in both systems. This information can be used to create a more representative indicator for the burden of CAN based on CAN health care visits using the methodology described here and CPS substantiated cases that do NOT link with a health care visit. These data linkages would also require analysis by person-level in order to establish an indicator that does not overestimate based on numerous CPS reports per child or numerous health care visits indicating CAN per child.

Corresponding death indicator:

Death certificates: Underlying cause of death=Y06-Y07 for children under 18 years of age.

Future work/considerations:

- Training professionals in recognition, documentation, and coding for CAN in health care settings.
- Establishing standardized guidelines/best practices for how and when to code for CAN in health records. Inpatient hospital CAN review boards (staff charged with reviewing cases that flag as suspicious for CAN or injuries that present in children of a specific age group that warrant review by the board for determination of CAN) work well in some larger health care agencies.
- Reviewing electronic medical records to identify codes suggestive of CAN at the state or facility level is encouraged as a method of validation of the CAN-specific codes and proxy codes identified in this document. Record abstraction can assist in validation of codes and determination of specificity and sensitivity calculations.