

CDC Youth Violence v1 **Definition Factsheet & Technical Brief**

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Definition Purpose: [Youth violence](#) is the intentional use of physical force or power to threaten or harm others by young people ages 10-24.¹ It typically involves young people hurting peers who are unrelated to them and who they may or may not know well.² It includes fighting, bullying, threats with weapons, and gang-related violence. A young person can be involved with youth violence as a victim, offender, or witness. The syndromic definition for Youth violence does not include sexual violence, intimate partner violence, emotional abuse, family violence, or child abuse/neglect by a parent or family member (definitions to capture these types of violence can be found in ESSENCE). The goal of this syndrome definition is to assist state, local, tribal, territorial, and federal public health practitioners in standardizing, identifying, and monitoring youth violence-related emergency department (ED) visits using syndromic surveillance data. The syndrome definition can improve states and communities’ understanding of trends in youth violence-related ED visits, which can inform timely prevention and response efforts.

Use-Cases for Definition:

- Case-finding
- Trend monitoring
- Early outbreak detection

New or Revised Definition: New

Added to ESSENCE: February 2024

Justification: Violence is a leading cause of death and nonfatal injuries among youth ages 10-24.² Several data sources report on violence victimization in various settings for youth. For example, the National Electronic Injury Surveillance System-All Injury Program (NEISS-AIP), which includes data from a nationally representative probability sample of hospitals in the U.S., reported an estimated 306,538 individuals (rate of 475 per 100,000 persons) ages 10-24 visited the ED for intentional assault-related injuries in 2021.¹ However, more timely data is needed to help public health practitioners track and understand trends in youth violence treated in EDs in near real-time.

Development Methods: The definition’s authors, including subject matter experts from the CDC’s Division of Violence Prevention, worked with four jurisdictions (Arizona, Alaska, Kentucky, and New Mexico) to test and validate it using visit data from January to December 2022.

1. The team evaluated diagnosis codes (International Classification of Diseases, 10th Revision (ICD-10-CM) and Systematized Nomenclature of Medicine (SNOMED)) from other violence-related syndrome

¹ Centers for Disease Control and Prevention. Preventing youth violence. Updated October 25, 2023. Accessed April 1, 2024.

² Centers for Disease Control and Prevention. Web-based Injury Statistics Query and Reporting System (WISQARS). CDC’s National Center for Injury Prevention and Control. www.cdc.gov/injury/wisqars. Accessed April 1, 2024.

definitions, assessing whether codes were necessary for identifying a youth-violence related injury, sufficient, or should be removed or recategorized from inclusion to exclusion (or vice versa).

2. The team assessed the chief complaint terms in other violence-related syndrome definitions for inclusion/exclusion in the definition.
3. The team added additional diagnosis codes and chief complaint terms related to violence not included in other violence-related definitions.
4. Participating jurisdictions computed the sensitivity of the definition using case-based surveillance data. Multiple sub-versions of the definition were iteratively analyzed and refined until the current definition (described in detail below) was finalized.

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

It is important to note that youth violence occurs in individuals ages 10-24. As such, this specific age range should be entered into the query, or the NCHS Age Grouping preset categories should be used (select both 11-14 AND 15-24).

When running this definition, the following existing definitions in ESSENCE must be excluded:

- Sexual Violence v1
- Sexual Violence v2
- CDC Sexual Violence v3
- CDC Suspected Child Abuse and Neglect v1
- Intimate Partner Violence v1
- CDC Intimate Partner Violence v2
- CDC Suicide Attempt v1
- CDC Suicidal Ideation v1

This may be done by adding the following to “CCDD category free text” field:

ISNULL,or,^,ANDNOT,(^Sexual Violence v[123]^,or,^;CDC Suspected Child Abuse and Neglect v1;^,or,^;Intimate Partner Violence v1;^,or,^;CDC Intimate Partner violence v2;^,or,^;CDC Suicide Attempt v1;^,or,^CDC Suicidal Ideation v1;^,)

Visits are classified as youth violence-related if:

1. The discharge diagnosis field includes an “included” code, even if the chief complaint is not specific to youth violence
 - For example, if a discharge diagnosis code is violence-related (e.g., ICD-10-CM Y04, assault by bodily force) but the chief complaint does not include violence-related terms (e.g., shortness of breath)

OR

2. The chief complaint includes a term specific to youth violence, but the discharge diagnosis field does not contain an included code
 - For example, if a chief complaint includes “patient was assaulted,” but there is not a discharge diagnosis code indicating a violence-related injury

OR

3. There is agreement in both the discharge diagnosis field and the chief complaint field that a visit is youth violence-related
 - For example, if a chief complaint includes “patient was at the gas station and robbed and then hit on the top of the head with an unknown object,” and there is a corresponding violence-related discharge diagnosis code (e.g., Y09, assault by unspecified means)

Validation Results: The positive predictive value (PPV) across the jurisdictions ranged from 72-99%.

Limitations: This definition has some limitations, including the inability to detect youth violence-related injuries if the specified chief complaint terms or discharge diagnosis codes are not included in the patient visit. Additionally, most patient visits do not provide enough information to determine whether the patient was the perpetrator or the victim of youth violence. Additional violence related chief complaint terms (e.g. hit, cut, kicked) were validated but not included in the definition due to numerous other injuries that are not related to violence. Although true positives are determined based on chief complaints and discharge diagnoses, several states used supplementary fields in ESSENCE, such as triage notes or clinical impressions, to note false positives. This resulted in lower PPVs than classification based only on CCDD data.

Detailed Definition Components

Table 1. Inclusion and exclusion terms based on a case definition using violence/assault discharge diagnosis codes, CDC Youth Violence definition

Variable Type	Terms	Description (Diagnosis Codes Only)
<i>Inclusions</i>		
Chief Complaint Terms	Assault	
	Beat/ing [up]	
	Beat/ing him/her/them	
	Catch/caught hands	
	Threw hands	
	Caught a fade	
	Fight/fought	
	Altercation	
	I/he/she/patient was attacked	
	Attacked by	
	Brawl	
	Violence	
	Violent	
	Robbed/robbing/robbery	
	Mugged/mugging/mugger	
	Was/they/got jumped	
	GSW	
	Gunshot	
	Gun wound	
	Revolver	
	Rifle	
	Shotgun	
	Firearm	
	Pistol	
	Handgun	
	Been shot	
	I was/got shot	
	Bullet	
	Hit	
	Ricochet	
Graze		
Buckshot		
Pistol whip		
Struck or hit with gun (or pistol)		
Discharge Diagnosis: ICD-9-CM	E96[0-9]	Assault codes
	E979	Terrorism codes
	E999.1	Injury due to terrorism

Discharge Diagnosis: ICD-10-CM	X92	Assault by drowning and submersion
	X93	Assault by handgun discharge
	X94	Assault by rifle, shotgun and larger firearm discharge
	X95	Assault by other and unspecified firearm and gun discharge
	X96	Assault by explosive material
	X97	Assault by smoke, fire and flames
	X98	Assault by steam, hot vapors and hot objects
	X99	Assault by sharp object
	Y00	Assault by blunt object
	Y01	Assault by pushing from high place
	Y02	Assault by pushing or placing victim in front of moving object
	Y03	Assault by crashing of motor vehicle
	Y04	Assault by bodily force
	Y07	Perpetrator of assault, maltreatment and neglect
	Y08	Assault by other specified means
	Y09	Assault by unspecified means
	T54.1X3	Toxic effect of other corrosive organic compounds, assault
	T54.2X3	Toxic effect of corrosive acids and acid-like substances, assault
	T54.3X3	Toxic effect of corrosive alkalis and alkali-like substances, assault
T71.XX3	Asphyxiation assault	
SNOMED Concepts	242869008	Assault by firearms
	219199009	Assault by handgun
	219200007	Assault by pistol
	219201006	Assault by revolver
	219204003	Assault by hunting rifle
	219205002	Assault by military firearm
	219203009	Assault by shotgun
	219198001	Assault by firearms and explosives
	11385001	Assault and battery
	219218005	Assault by cutting and stabbing instruments
	52684005	Exposure to attack by other person (event)
	269732008	Assault by corrosive substance, except poisoning (event)
	219182008	Assault by acid
	242856009	Assault by ammonia
	242857000	Assault by caustic alkalies
	219184009	Assault by caustic substance (event)
	219181001	Assault by corrosive or caustic substance, except poisoning
	219240001	Assault by criminal neglect (event)
	219241002	Abandonment of child with intent to injure or kill (event)
	242872001	Assault by cutting (event)
	242878002	Assault by cutting with axe
	242873006	Assault by cutting with knife
	242874000	Assault by cutting with craft knife (event)
	242876003	Assault with broken glass or bottle
	242875004	Assault with razor
	242886002	Assault by puncture wound
	242888001	Assault with stiletto (event)
	242887006	Assault with used injection needle (event)

219197006	Assault by drowning
274954001	Assault by explosive device
219207005	Assault by antipersonnel bomb
219213001	Assault by bomb in house
242870009	Assault by booby trap bomb (event)
219212006	Assault by car bomb (event)
219214007	Assault by dynamite
219208000	Assault by gasoline bomb (event)
242871008	Assault by land-mine (event)
219209008	Assault by letter bomb (event)
219231000	Assault by fire and burning
219232007	Assault by arson (event)
242921009	Assault by branding
242920005	Assault by cigarette burn
219239003	Assault by hot liquid (event)
219191007	Assault by hanging and strangulation
219192000	Assault by garrotting or ligature
219193005	Assault by hanging (event)
269734009	Assault by manual strangulation (event)
219194004	Assault by strangulation (event)
219195003	Assault by suffocation (event)
242868000	Assault by high intensity noise
429626008	Assault by friend (event)
429580005	Assault by legal official
428498002	Assault by stranger
428500001	Assault by unrelated caregiver
428200002	Assault by person
242930001	Assault by physical restraint (event)
242931002	Assault by binding
242934005	Assault by physical restraint with adhesive tape (event)
242933004	Assault by physical restraint with handcuffs
242932009	Assault by physical restraint with rope or cord (event)
242936007	Assault by blindfolding
242935006	Assault by gagging (event)
219186006	Assault by poisoning
219187002	Assault by poisoning by drugs or medicines
269733003	Assault by poisoning by gas or vapor (event)
302986003	Assault by poisoning by non-pharmaceutical substances (event)
242858005	Assault by poisoning with local irritant (event)
242859002	Assault by poisoning with ammonia
242861006	Assault by poisoning with bleach
242864003	Assault by poisoning with mace spray (event)
242860007	Assault by poisoning with pepper dust
242863009	Assault by poisoning with perfume spray (event)
219234008	Assault by pushing from high place
219235009	Assault by striking by blunt or thrown object (event)
219236005	Assault by striking with blunt object (event)
242908002	Assault with baseball bat
242913003	Assault with club (event)
242910000	Assault with hammer (event)
242914009	Assault with held brick
242911001	Assault with poker
242907007	Assault with stick (event)
242912008	Assault with truncheon (event)
242909005	Assault with walking stick (event)

	242919004	Assault by striking with thrown stone (event)
	219237001	Assault by striking with thrown object (event)
	242924001	Assault by pushing from moving vehicle
	242926004	Assault by pushing from moving motor vehicle (event)
	242925000	Assault by pushing from moving train
	242927008	Assault by pushing into path of moving vehicle
	242929006	Assault by pushing into path of moving motor vehicle
	242928003	Assault by pushing into path of train
	242923007	Assault by striking with motor vehicle (event)
	242922002	Assault involving moving vehicles
	242889009	Assault with body part (event)
	242903006	Assault by human bite (event)
	242896006	Blow with elbow
	242897002	Blown with knee (event)
	242895005	Head butt
	242898007	Held by assailant (event)
	242901008	Grasped and twisted by assailant (event)
	242900009	Grasped with arm (event)
	242899004	Grasped with hand (event)
	242902001	Sat on by assailant
	242894009	Intentional tripped
	242892008	Kick with foot
	242893003	Kick with shod foot (event)
	242905004	Pinched
	242890000	Punch with fist (event)
	242904000	Scratched with fingernails
	242891001	Slap with open hand (event)
	242865002	Assault with electrical device (event)
	242866001	Assault by torture with electric current
	242867005	Assault with electric antipersonnel device
	242915005	Assault with flexible instrument (event)
	242916006	Assault with cane (event)
	242918007	Assault with strap
	242917002	Assault with whip
	219222000	Cut in fight (event)
	274229005	Fight – assault
	219223005	Stabbed in fight (event)
	50084004	Battery
Exclusions		
Chief Complaint Terms	Heart beat; hrt beat	
	Heart is beat; beath	
	Heart skips	
	Difficulty beat	
	Premature beats	
	Extra beats	
	Feels beat	
	Verbal altercation	
	Acting	
	Play	
	Threat	
	Feel[is]	
	No injury	
	Followup	
Chronic		
Wound check		

Wound care	
Wound recheck	
Wound infection	
Wound infected	
Drainage	
Gswel/Gswol	
No gun	
Remove gun	
Heard gun	
Hearing gun	
Hit [my] head	
Kickback	
Water gun	
Pellet	
BB gun	
Bebe/bibi/beebe gun	
BB pellet	
Rubber bullet	
Paint	
Nerf	
Airgun	
Airsoft	
Spring	
Nail gun	
Damage to nail	
Staplegun	
Stun	
Ta[sz]er	
Bloodshot	
Scope	
Fake	
Allergy shot	
Injection	
Self inflicted	
Self caus	
Accident	
Unintent	
Ideation	
Attacked or assaulted by sister	
Attacked or assaulted by brother	
Attacked or assaulted by sibling	
Attacked or assaulted by cousin	
Attacked or assaulted by caretaker	
Attacked or assaulted by relative	
Attacked or assaulted by son	
Attacked or assaulted by daughter	
Attacked or assaulted by mother/mom	
Attacked or assaulted by father/dad	
Attacked or assaulted by nurse	
Attacked or assaulted by animal	
Attacked or assaulted by dog	

	Panic attack	
	Anxiety attack	
	Asthma attack	
	Psychiatric	
	Psych eval	
	Mental health eval	
Discharge Diagnosis: ICD-10-CM	Z13.3	Encounter for screening examination for mental health and behavioral disorders
	Z51.89	Encounter for other specified aftercare
	X7[1-9]-X8[0-3]	Intentional self-harm codes

Table 2. CCDD Parsed, ESSENCE syntax, CDC Youth Violence Definition V1

(, (, (^ass[au]lt^, OR, ^ass[au][au]lt^, OR, ^beat^, ANDNOT, (^heartbeat^, OR, ^heart beat^, OR, ^heart is beat^, OR, ^difficulty beat^, OR, ^beath^, OR, ^hrt beat^, OR, ^feels beat^, OR, ^heart skips^, OR, ^extra beats^, OR, ^premature beats^), OR, ^beat up^, OR, ^beating up^, OR, ^beat him^, OR, ^beat her^, OR, ^beat them^, OR, ^beating him^, OR, ^beating her^, OR, ^beating them^, OR, ^catch hands^, OR, ^caught hands^, OR, ^caught those hands^, OR, ^caught a fade^, OR, ^threw hands^, OR, (^fight^, ANDNOT, ^play^), OR, ^fought^, OR, (^altercation^, ANDNOT, ^verbal altercation^), OR, ^I was attacked^, OR, ^he was attacked^, OR, ^she was attacked^, OR, ^patient was attacked^, OR, ^attacked by^, OR, ^brawl^, OR, ^pistol whip ^, OR, ^pistol whipped^, OR, ^pistol whipping^, OR, (^violence^, OR, ^violent^), ANDNOT, (^acting^, OR, ^threat^, OR, ^feel[is]^), OR, (^robbed^, OR, ^robbery^, OR, ^ robbing^, OR, ^robber^, OR, ^mugging^, OR, ^mugged^, OR, ^mugger^, OR, ^was jumped^, OR, ^they jumped^, OR, ^got jumped^), ANDNOT, (^no injury^),), OR, (^ass[au][au]lt^), AND, (!, gsw!, OR, ^gunshot^, OR, ^gun shot^, OR, ^gunshout^, OR, ^gunshoot^, OR, ^buckshot^, OR, ^buck shot^, OR, ^revolver^, OR, ^rifle^, OR, ^rifle^, OR, ^shotgun^, OR, ^shot gun^, OR, ^firearm^, OR, ^fire arm^, OR, ^pistol^, OR, ^handgun^, OR, ^hand gun^, OR, ^been shot^, OR, ^I was shot^, OR, ^I got shot^, OR, (^struck^, OR, ^hit with^), AND, (^gun^, OR, ^pistol^), OR, (, (^hit^, OR, ^ricochet^, OR, ^graze^), AND, (^bullet^),), OR, (^gun^, AND, ^wound^),), ANDNOT, (^no gun^, OR, ^remove gun^, OR, ^heard gun^, OR, ^hearing gun^, OR, ^hit head^, OR, ^hit my head^, OR, ^kickback^, OR, ^kick back^, OR, ^kicked back^, OR, ^water gun^, OR, ^watergun^, OR, ^pelle^, OR, ^pellt^, OR, ^ bb ^, OR, ^bebe gun^, OR, ^bb gun^, OR, ^bbgun^, OR, ^b b gun^, OR, ^bibi gun^, OR, ^bi bi gun^, OR, ^bb pellet^, OR, ^bee bee^, OR, ^beebe^, OR, ^rubber bullet^, OR, ^paint^, OR, ^nerf^, OR, ^nurf^, OR, ^airgun^, OR, ^air gun^, OR, ^airsoft^, OR, ^air soft^, OR, ^spring^, OR, (^nail^, ANDNOT, ^damage to nail^), OR, ^nailgun^, OR, ^nail gun^, OR, ^staplegun^, OR, ^staple gun^, OR, ^stun^, OR, ^ta[sz]er^, OR, ^la[sz]er^, OR, ^bloodshot^, OR, ^blood shot^, OR, ^scope^, OR, ^fake^, OR, ^allergy shot^, OR, ^injection^, OR, ^follow-up^, OR, ^follow up^, OR, ^followup^, OR, ^chronic^, OR, (^wound^, AND, (^check^, OR, ^care^, OR, ^recheck^, OR, ^infection^, OR, ^infected^),), OR, ^drainage^, OR, ^gswel^, OR, ^gswol^, OR, ^;Z5189^),), ANDNOT, (^selfinflicted^, OR, ^self inflicted^, OR, ^self caus^, OR, ^self harm^, OR, ^accident^, OR, ^unintent^, OR, ^threat^, OR, ^ideation^, OR, ^;X7[1-9]^, OR, ^;X8[0-3]^),), ANDNOT, (, (^attacked^, OR, ^assaulted by^, OR, ^assaulted by^), AND, (^sister^, OR, ^brother^, OR, ^sibling^, OR, ^cousin^, OR, ^caretaker^, OR, ^relative^, OR, ^son^, OR, ^daugh ter^, OR, ^mother^, OR, ^mom^, OR, ^father^, OR, ^dad^, OR, ^nurse^, OR, ^friend^, OR, ^animal^, OR, ^dog^),), OR, ^;X9 [2-9]^, OR, ^Y0[0-9]^, OR, ^;T54[123]X3^, OR, ^;T71XX3^, OR, ^;E96[0-9]^, OR, ^;E979^, OR, ^;E9991^, OR, ^;242869008^, OR, ^;219199009^, OR, ^;219200007^, OR, ^;219201006^, OR, ^;219204003^, OR, ^;219205002^, OR, ^;219203009^, OR, ^;219198001^, OR, ^;11385001^, OR, ^;219218005^, OR, ^;52684005^, OR, ^;269732008^, OR, ^;219182008^, OR, ^;242856009^, OR, ^;242857000^, OR, ^;219184009^, OR, ^;219181001^, OR, ^;219240001^, OR, ^;219241002^, OR, ^;242872001^, OR, ^;242878002^, OR, ^;242873006^, OR, ^;242874000^, OR, ^;242876003^, OR, ^;242875004^, OR, ^;242886002^, OR, ^;242888001^, OR, ^;242887006^, OR, ^;219197006^, OR, ^;274954001^, OR, ^;219207005^, OR, ^;219213001^, OR, ^;242870009^, OR, ^;219212006^, OR, ^;219214007^, OR, ^;219208000^, OR, ^;242871008^, OR, ^;219209008^, OR, ^;219231000^, OR, ^;219232007^, OR, ^;242921009^, OR, ^;242920005^, OR, ^;219239003^, OR, ^;219191007^, OR, ^;219192000^, OR, ^;219193005^, OR, ^;269734009^, OR, ^;219194004^, OR, ^;219195003^, OR, ^;242868000^, OR, ^;429626008^, OR, ^;429580005^, OR, ^;428498002^, OR, ^;428500001^, OR, ^;428200002^, OR, ^;242930001^, OR, ^;242931002^, OR, ^;242934005^, OR, ^;242933004^, OR, ^;242932009^, OR, ^;242936007^, OR, ^;242935006^, OR, ^;219186006^, OR, ^;219187002^, OR, ^;269733003^, OR, ^;302986003^, OR, ^;242858005^, OR, ^;242859002^, OR, ^;24

2861006;^,OR,^;242864003;^,OR,^;242860007;^,OR,^;242863009;^,OR,^;219234008;^,OR,^;219235009;^,OR,^;219236005;^,OR,^;242908002;^,OR,^;242913003;^,OR,^;242910000;^,OR,^;242914009;^,OR,^;242911001;^,OR,^;242907007;^,OR,^;242912008;^,OR,^;242909005;^,OR,^;242919004;^,OR,^;219237001;^,OR,^;242924001;^,OR,^;242926004;^,OR,^;242925000;^,OR,^;242927008;^,OR,^;242929006;^,OR,^;242928003;^,OR,^;242923007;^,OR,^;242922002;^,OR,^;242889009;^,OR,^;242903006;^,OR,^;242896006;^,OR,^;242897002;^,OR,^;242895005;^,OR,^;242898007;^,OR,^;242901008;^,OR,^;242900009;^,OR,^;242899004;^,OR,^;242902001;^,OR,^;242894009;^,OR,^;242892008;^,OR,^;242893003;^,OR,^;242905004;^,OR,^;242890000;^,OR,^;242904000;^,OR,^;242891001;^,OR,^;242865002;^,OR,^;242866001;^,OR,^;242867005;^,OR,^;242915005;^,OR,^;242916006;^,OR,^;242918007;^,OR,^;242917002;^,OR,^;219222000;^,OR,^;274229005;^,OR,^;219223005;^,OR,^;50084004;^,^),ANDNOT,(^panic attack^,OR,^anxiety attack^,OR,^asthma attack^,OR,^psychiatric^,OR,^psych eval^,OR,^mental health eval^,OR,^Z133^,)