

All-terrain vehicle (ATV) related v1
Definition Factsheet & Technical Brief

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Definition Description:

The goal of this definition is to detect emergency department (ED) visits related to all-terrain vehicle (ATV) (traffic-related or non-traffic-related) accident injuries. With this information public health agencies can monitor the burden and trends of ED visits related to these types of accidents, understand the types of injuries observed, and identify possible places/methods for prevention.

New or Revised Definition: New

Date Added to ESSENCE: May 2025

Use-Cases for Definition:

Case-finding: Not Intended as Use Case

Trend monitoring: Primary

Early outbreak detection: Not Intended as Use Case

Emergent Condition: Secondary

Justification: There are ICD-10 and SNOMED codes for these type of injuries, but the specific appropriate diagnosis codes are not always assigned or reported. By also querying the Chief Complaint for text terms, we can detect additional visits of interest in order to attain a fuller understanding of the burden of ATV accidents and the associated types of injuries.

Data Source During Development: Emergency Department visits

Validation Methods: Each of the five participating jurisdictions (Alaska, Colorado, Nebraska, Snohomish County (Washington), and Wisconsin) manually reviewed the data details of emergency department visits returned by the initial version of the query. Each jurisdiction classified visits as true or false positives, and calculated positive predictive values. False positives were visits that were not for an ATV accident or visits where the person was injured while doing maintenance or some other activity on a parked ATV (and there was no indication that the ATV was moving or had been moving). False positives were reviewed to identify patterns of why they were included, and the query was improved, where possible, to remove false positives. Additionally, the query syntax was adjusted to also include “side by side” vehicles. Four of the five jurisdictions manually reviewed the results of the updated, final query and calculated positive predictive values for the final version of the query.

Validation Results: For the final version of this query, the positive predictive values were 91% for Nebraska, 94% for Colorado, 95% for Alaska, and 96% for Wisconsin.

Limitations: Injuries suffered while lifting, moving, or performing maintenance on an ATV can be difficult to negate, and therefore might be included. By design, the query includes diagnosis codes for ‘other’ type of ATV which might include vehicles that were not intended to be included. The authors decided to include syntax to

search for “side by side” type ATVs which, despite efforts to negate specific terms (e.g., “living in”), can result in some unexpected false positives not related to “side by side” ATVs. The query does not limit visit to certain types of symptoms or reasons for visit. As a result, the query might return visits where an ATV was mentioned but the reason for visit was not related to an ATV accident (e.g., getting something in their eye or getting hit in the face with an object while riding an ATV).

Definition Fields and Structure:

The Chief Complaint Discharge Diagnosis Parsed Free Text field (also applied to Chief Complaint History) is used to query discharge diagnosis codes and free text with exclusions (as necessary), to develop the syndrome definition.

Visits are included if they have either of the following:

- One or more of the diagnosis codes listed in Table 1.
- Text terms or abbreviations that refer to all-terrain vehicles (ATV), utility vehicles (UTV), four-wheelers, three-wheelers, or side-by-side utility vehicles.

Visits are excluded if they have Chief Complaint or Chief Complaint History text terms that:

- Refer to vehicles that are not “ATVs” (i.e., snowmobiles, buggies, dirt bikes, motorcycles, or golf carts).
- Refer to “side by side” that has a different meaning than the type of utility vehicle.
- Refer to the occurrence happening in the distant past.
- Indicate the person was working on the vehicle.
- Indicate the person was seeking a return to work notice.

Detailed Definition Components

Table 1. Inclusion and exclusion terms

Type	Terms	Description
<i>Inclusions</i>		
Discharge Diagnosis: ICD-10-CM	Includes initial encounters for “Occupant of special all-terrain or other off-road motor vehicle, injured in transport accident”, ICD-10 code V86.	
	Types of off-road vehicles included:	
	<ul style="list-style-type: none"> • ATV (V86._5) • other (V86._9) 	
	Includes drivers, passengers, people on outside of vehicle, unspecified people, people getting on/off vehicle, in traffic and nontraffic accidents.	
	V86.05XA	Driver of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
	V86.15XA	Passenger of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
	V86.25XA	Person on outside of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
	V86.35XA	Unspecified occupant of 3- or 4- wheeled all-terrain vehicle (ATV) injured in traffic accident
	V86.45XA	Person injured while boarding or alighting from a 3- or 4- wheeled all-terrain vehicle (ATV)
	V86.55XA	Driver of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
	V86.65XA	Passenger of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
	V86.75XA	Person on outside of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident

	V86.95XA	Unspecified occupant of 3- or 4- wheeled all-terrain vehicle (ATV) injured in nontraffic accident
	V86.09XA	Driver of other special all-terrain or other off-road motor vehicle injured in traffic accident
	V86.19XA	Passenger of other special all-terrain or other off-road motor vehicle injured in traffic accident
	V86.29XA	Person on outside of other special all-terrain or other off-road motor vehicle injured in traffic accident
	V86.39XA	Unspecified occupant of other special all-terrain or other off-road motor vehicle injured in traffic accident
	V86.49XA	Person injured while boarding or alighting from other special all-terrain or other off-road motor vehicle
	V86.59XA	Driver of other special all-terrain or other off-road motor vehicle injured in nontraffic accident
	V86.69XA	Passenger of other special all-terrain or other off-road motor vehicle injured in nontraffic accident
	V86.79XA	Person on outside of other special all-terrain or other off-road motor vehicles injured in nontraffic accident
	V86.99XA	Unspecified occupant of other special all-terrain or other off-road motor vehicle injured in nontraffic accident
Discharge Diagnosis: SNOMED concepts	81826000	All-terrain vehicle, device (physical object)
	214733004	Fall from off-road land motor vehicle
	302974001	Accident involving off-road land motor vehicle (event)
	242131001	Dragged by off-road land motor vehicle
	242130000	run over by off-road land motor vehicle
	269656002	Overturning of off-road land motor vehicle (event)
	242135005	Off-road land motor vehicle in collision with object (event)
	242137002	Off-road land motor vehicle in collision with pedestrian (event)
	269658001	Accident to off-road land motor vehicle involving animals (event)
	302976004	Off-road land motor vehicle in collision with fixed object (event)
	242138007	Off-road land motor vehicle in collision with railway train (event)
	242136006	Off-road land motor vehicle in collision with road motor vehicle (event)
	242140002	Fall while boarding or alighting from off-road land motor vehicle (event)
	242139004	Accident while boarding or alighting from off-road land motor vehicle (event)
	269657006	Accident due to being thrown against fixture in off-road land motor vehicle (event)
	242141003	Injury from moving part off-road land motor vehicle while boarding or alighting (disorder)
	214744007	Hit by off-road land motor vehicle
	214766000	Nontraffic accident involving being run over or dragged by off-road motor vehicle, except snow vehicle (event)
	214778001	Nontraffic accident involving being thrown against some part of or object in, off-road motor vehicle, except snow vehicle, of motor vehicle injured (event)
	269655003	Accident due to breakage of part of off-road land motor vehicle (event)
	242134009	Off-road land vehicle in collision with animal-drawn vehicle (event)
	242132008	Off-road land vehicle in collision with ridden animal (event)
	242133003	Off-road land vehicle in collision with unriden animal (event)
Chief Complaint, Chief Complaint History	Terms and abbreviations that refer to all-terrain vehicles, utility vehicles, four-wheelers, three-wheelers, and side-by-side utility vehicles.	
Exclusions		
Chief Complaint, Chief Complaint History	Terms that refer to vehicles that are not “ATVs” (i.e., snowmobiles, buggies, dirt bikes, motorcycles, golf carts). Terms that refer to side by side that has a different meaning than the type of utility vehicle. Terms that refer to the occurrence happening in the distant past.	

Terms that indicate the person was working on or under the vehicle. Terms that indicate the person was seeking a return to work notice.

Plain Language Syntax Description

The diagnosis codes are searched for ICD-10 codes related to injuries while being a passenger, driver, people outside of vehicle, or boarding or alighting a 3- or 4- wheeled all-terrain vehicle (ATV) or utility vehicle (UTV) – in traffic and non-traffic accidents. The diagnosis codes are searched for SNOMED codes related to off-road land motor vehicles.

Chief Complaint and Chief Complaint History are searched for phrases that indicate the visit was related to an ATV, UTV, side by side, 4 wheeler, or 3 wheeler accident.

Certain phrases like “ATV helmet” or indications that the accident occurred in the distant past or indications the visit was for a return to work notice are excluded. Terms that indicate the accident involved a non-ATV/UTV vehicle (i.e., golf cart, dirt bike, buggy, motor cycle, snowmobile) are excluded.

ESSENCE Syntax

Table 2. *ESSENCE syntax*

Use the following URL and click "Configuration Options" to see the query setup:

https://essence.syndromicsurveillance.org/nssp_essence/servlet/TemporalTimeSeriesViewer?sessionAttributeID=2380_23_04_2025_20_51_24_2385

Search CC and DD Parsed Free Text with Also Apply to Chief Complaint History:

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(,^;V86[0-9][59]XA^,OR,^;81826000;^,OR,^;214733004;^,OR,^;302974001;^,OR,^;242131001;^,OR,^;242130000;^,OR,^;269656002;^,OR,^;242135005;^,OR,^;242137002;^,OR,^;269658001;^,OR,^;302976004;^,OR,^;242138007;^,OR,^;242136006;^,OR,^;242140002;^,OR,^;242139004;^,OR,^;269657006;^,OR,^;242141003;^,OR,^;214744007;^,OR,^;214766000;^,OR,^;214778001;^,OR,^;269655003;^,OR,^;242134009;^,OR,^;242132008;^,OR,^;242133003;^,OR,^all[ -]terrain vehicle^,OR,(^ATV^),ANDNOT,(^[a-z]ATV^,or,^ATV[a-z]^),OR,^utility vehicle^,OR,(^UTV^),ANDNOT,(^[a-z]UTV^,or,^UTV[a-z]^),OR,^4_wheeler^,OR,^3_wheeler^,OR,^4wheeler^,OR,^3wheeler^,OR,^four_wheeler^,OR,^three_wheeler^,OR,^side_by_side^,ANDNOT,(^lives in^,OR,^living in^,OR,^side_by_side assist^,OR,^walk side_by_side^,OR,^walking side_by_side^,OR,^images side_by_side^,OR,^side_by_side lacera^,OR,^stand side_by_side^,OR,^standing side_by_side^,OR,^side_by_side vision^,OR,^worked side_by_side^),),ANDNOT,(^ATV helmet^,OR,^weeks ago^,OR,^wks ago^,OR,^months ago^,OR,^month ago^,OR,^years ago^,OR,^wound check^,OR,^working on^,OR,^working under^,OR,^return to work^,OR,^dirtbike^,OR,^dirt bike^,OR,^golf[ck]art^,or,^golf_[ck]art^,OR,^go[ck]art^,OR,^go_[ck]art^,OR,^buggy^,OR,^scooter^,OR,^snowmobile^,OR,^snow mobile^,OR,^snowmachine^,OR,^snow machine^,OR,^motorcros^,OR,^motocros^,OR,^motorcycle^,OR,^motorbike^,OR,^still UTV^,)
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In a separate Chief Complaint History field, add the following negation criteria:

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ISNULL,OR,^,ANDNOT,(^ATV helmet^,OR,^weeks ago^,OR,^wks ago^,OR,^months ago^,OR,^month ago^,OR,^years ago^,OR,^wound check^,OR,^working on^,OR,^working under^,OR,^return to work^,OR,^dirtbike^,OR,^dirt bike^,OR,^golf[ck]art^,or,^golf_[ck]art^,OR,^go[ck]art^,OR,^go_[ck]art^,OR,^buggy^,OR,^scooter^,OR,^snowmobile^,OR,^snow mobile^,OR,^snowmachine^,OR,^snow machine^,OR,^motorcros^,OR,^motocros^,OR,^motorcycle^,OR,^motorbike^,OR,^still UTV^,)
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