Multiple Cause of Death and Injury Surveillance

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Data Source: National Vital Statistics System, National Center for Health Statistics

Two ways to look at multiple cause data and injury

1. Underlying cause of death is an injury.

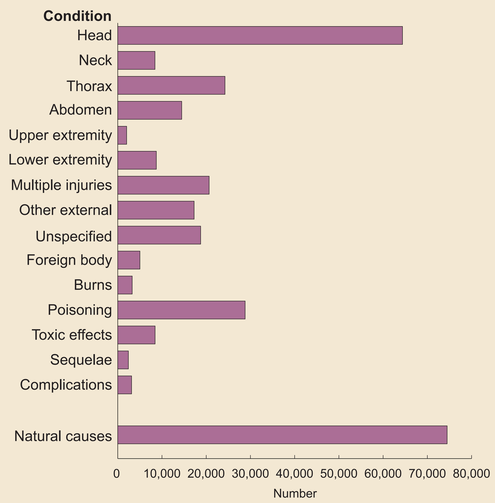
What are the diagnoses associated with those deaths?

Diagnoses can be injuries (e.g., open wounds, fractures), natural causes or external causes.

Underlying cause is an injury

- In 1999, 148,286 deaths were due to injuries as defined by ICD-10 Recommended Matrix for categorization of mortality data.
  - These are the V-W-X-Y codes excluding codes for complications of medical and surgical care.
- These deaths were associated with:
  - 230,028 injury diagnoses (S00-T98)
  - 74,473 natural cause diagnoses (A00-R99)
  - 3,213 'additional' external causes (V01-Y36, Y85-Y87, and Y89)

Diagnoses associated with injury deaths (n=148,286 deaths)



2. Underlying cause of death is not an injury.

What are the injury diagnoses associated with those deaths?

Diagnoses can be injuries (e.g., open wounds, fractures) or external causes.

Underlying cause is not an injury

- External cause codes can be appropriately found in multiple cause fields when the underlying cause of death is a natural cause.
- But, relatively few such V-W-X-Y codes make up the majority of these diagnoses.
  - 8 codes account for 86% of all mentions of injury external causes (33,224/38,529).
  - 2 of the 8 codes –W80 and X59– account for 67%.
- 8 specific causes of "natural" death account for 47% (18,056/38,529) of all mentions of any injury external cause codes.
- 9 causes from the 113 cause-of-death list account for 73% of all mentions of any injury external cause codes.

Background

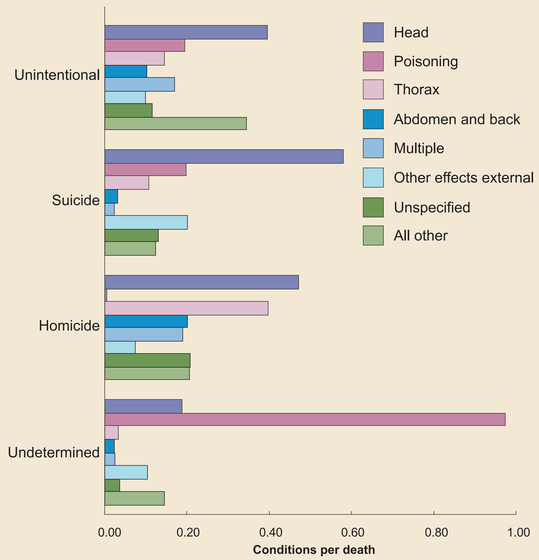
- Public use mortality file for data year 1999.
- Data coded according to ICD-10.
- External cause data categorized by Recommended V-W-X-Y Matrix.[1]
- Injury diagnosis data are categorized by chapter subheadings in ICD-10 (primarily by body region).

[1] See http://www.cdc.gov/nchs/about/otheract/ice/matrix10.htm.

- This poster presentation is based on record axis fields. The codes in these fields are derived from information listed on the death certificate and processed by TRANSAX to be consistent with correct medical certification including the removal of duplicate codes.
- Mortality files allow for up to 20 diagnoses per death.

Conditions per injury death

Manner of death by condition



What's next?

- What specific external cause codes are attributed to which natural causes of death?
  - Do they vary by age (probably)?
- What are the additional specific external cause codes that are attributed to deaths due to injuries?
- Tabulate "main injury" by Barell matrix categorization.
- Are we under counting injury deaths by only analyzing underlying cause of death?
  - I don't think so…..

For more details on mortality data from NCHS

www.cdc.gov/nchs/about/major/dvs/mortdata.htm

For more information on international perspectives on multiple cause data.

www.cdc.gov/nchs/ppt/ice/mcod.ppt

What are the leading injury V-W-X-Y codes associated with noninjury causes of death?

ICD-10 code	Cause	Mentions	Percent
W80	Inhalation and ingestion of other objects causing obstruction of respiratory	14,693	38.1
X59	Exposure to unspecified factor	11,157	29.0
W19	Unspecified fall	3,052	7.9
W84	Unspecified threat to breathing	1,227	3.2
X44	Accidental poisoning by and exposure to other and unspecified drugs	984	2.6
X42	Accidental poisoning by and exposure to narcotics and psychodysleptic	797	2.1
W78	Inhalation of gastric contents	782	2.0
W79	Inhalation and ingestion of food causing obstruction of respiratory tract	532	1.4
	Subtotal	**33,224**	**86.2**

Specific noninjury causes with injury mentions

ICD-10 code	Cause	Injury (V-W-X-Y) mentions	
	All Cause	38,529	100.0
I25.1	Chronic ischemic heart disease - atherosclerotic	3,100	8.0
I64	Stroke, not specified as hemorrhage or infarction	3,211	8.3
I21.9	Acute myocardial infarction, unspecified	1,874	4.9
J69.0	Pneumonitis due to food and vomit	2,848	7.4
I25.0	Atherosclerotic CVD, so described	1,827	4.7
J44.9	COPD, unspecified	1,711	4.4
G30.9	Alzheimer's disease, unspecified	1,942	5.0
F03	Unspecified dementia	1,543	4.0
	Subtotal	**18,056**	**46.9**

Leading noninjury causes of death with external cause codes

Causes of death from the 113 cause-of-death list	Deaths	Any injury V-W-X-Y: All mentions	Any injury V-W-X-Y: Percent	Any complication of care: All mentions	Any complication of care: Percent
All noninjury	2,243,113	38,529	100.0	33,362	
All other diseases (Residual)	171,683	7,020	18.2	4,739	14.2
Cerebrovascular diseases	167,366	5,436	14.1	1,075	3.2
All other forms of chronic ischemic heart disease	326,973	3,456	9.0	4,109	12.3
Pneumonitis due to solids and liquids	15,268	2,849	7.4	0	
Alzheimer's disease	44,536	2,033	5.3	0	
Acute myocardial infarction	199,454	1,877	4.9	1,179	3.5
Other forms of chronic ischemic heart disease	326,973	1,827	4.7	0	
Other chronic lower respiratory diseases	100,565	1,829	4.7	0	
All other forms of heart disease	108,909	1,827	4.7	2,825	8.5
Subtotal	**1,461,727**	**28,154**	**73.1**		**41.7**