International comparisons of injury using the ICE indicators

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What we’ll talk about....

• International Collaborative Effort on Injury Statistics (ICE) criteria for indicators
• Barriers to comparability
  • Coding rules
  • Unspecified codes
• Global Injury Mortality Database
• Fatal injury indicators
  • All injury
  • Motor vehicle traffic
  • Suicide
  • Homicide
• Discussion
Desirable qualities of injury indicators:

1. **Case Definition.** The indicator should reflect the occurrence of injury satisfying some case definition of anatomical or physiological damage.

2. **Serious Injury.** The indicator should be based on events that are associated with significantly increased risk of impairment, functional limitation, disability or death, decreased quality of life, or increased cost (i.e. serious injury).

3. **Case Ascertainment.** The probability of a case being ascertained should be independent of social, economic and demographic factors, as well as service supply and access factors.
Desirable qualities of injury indicators (con’t)

4. **Representativeness.** The indicator should be derived from data that are inclusive or representative of the target population that the indicator aims to reflect.

5. **Data Availability.** It should be possible to use existing data systems, or it should be practical to develop new systems, to provide data for computing the indicator.

6. **Specification.** The indicator should be fully specified to allow calculation to be consistent at any place and at any time.

Cryer C, Langley J. Developing indicators of injury incidence that can be used to monitor global, regional and local trends, 2008.
Barriers to international comparability

- **Coding rules**
  
  Example: Manner of death

- **Data quality**
  
  Example: Unspecified codes

- **ICE developed fixes**
  
  Categorization of ICD codes into meaningful groups: External cause of injury matrices, Injury Mortality Diagnosis Matrix, and Barell Matrix for body region and nature
### Example: International comparison of drowning death rates

<table>
<thead>
<tr>
<th>Country</th>
<th>Death rate per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>9.9</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>3.4</td>
</tr>
<tr>
<td>United States</td>
<td>11.1</td>
</tr>
</tbody>
</table>

Why is the UK rate so low?

Unintentional

Australia

United Kingdom

USA

Homicide

Drowning rates per million population for selected countries, 2004

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Intent</th>
<th>Unintentional</th>
<th>Suicide</th>
<th>Homicide</th>
<th>Undetermined</th>
<th>Legal intervention / war</th>
</tr>
</thead>
<tbody>
<tr>
<td>All injury</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut / pierce</td>
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</tr>
<tr>
<td>Drowning</td>
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<tr>
<td>Suffocation</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Unspecified</td>
<td></td>
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</tbody>
</table>

ICD External cause codes
Exposure to Unspecified Factor*
Death rates, Selected countries, 2005

* ICD-10 X59 Exposure to Unspecified factor
Data Source
Global Injury Mortality Database

Data included:

- Country level cause of death (injury) tabulations disaggregated by age-sex external cause categories (based on Global Burden of Diseases (GBD) & ICE definitions)

Sources of data:

- National civil registration systems
- If possible, from the WHO Mortality Database
- Other data submitted by the GBD Injury Expert Group*

* [http://sites.google.com/site/gbdinjuryexpertgroup](http://sites.google.com/site/gbdinjuryexpertgroup)
**Data Source**

Global Injury Mortality Database

**Processing of data:**
- Reclassified external causes to GBD and ICE definitions
- Quality checked by accessing the proportion of deaths coded to partially specified causes
- Redistributed cases with unspecified causes

**Data access:**
- GBD Injury Expert Group Website at [http://sites.google.com/site/gbdinjuryexpertgroup](http://sites.google.com/site/gbdinjuryexpertgroup)
- Use the Mortality Data : ICE Matrix Definitions
Injury death rates
Selected countries, 2005

Injury death rates
Selected countries and years

Motor vehicle traffic death rates
Selected countries, 2005

Suicide rates
Selected countries, 2005

Homicide rates
Selected countries, 2005

ICE mortality indicators

- Progress on mortality indicators
  - Defined criteria
  - Identified potential indicators
  - Compared trends for selected countries

- Limitations of mortality indicators
  - Quality and completeness of data
  - Non-comparable data sources
  - Potential measurement of extraneous factors
More ICE indicators to come ...

- Traumatic Brain Injury mortality indicator
- Morbidity indicators
  - Severity threshold for inclusion
    - Probability of death
    - Probability of admission
  - Functional outcomes/ disability
Questions?

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For more information on injury data and resources from NCHS, see: www.cdc.gov/nchs/injury.htm.