ICE on Injury Statistics
and its Success in
Problem Identification & Description

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Public Health Approach & Injury Control (CDC)
Information Needs & PHA

• Define the problem
  – Surveillance data from various sources
  – Identification of at-risk populations
  – Description of potential risk factors
Information Needs & PHA ct’d

• Identify risk/protective factors
  – Comparison of data across environments (sites, sub-populations, countries etc.)
  – Characterization of injury patterns
  – Case-mix comparisons
  – In-depth research studies
Information Needs & PHA ct’d

• Develop and test intervention strategies
  – Evaluation for effectiveness
  – Indicators for monitoring
Information Needs & PHA

• Define the problem

  – Surveillance data from various sources
  – Identification of at-risk populations
  – Description of potential risk factors
Challenge I

• To establish data collection systems
  – Absence of an information culture
    • Resistance to data
    • Knee-jerk and short-sighted reaction to problems vis-a-vis designed and evaluated interventions
  – Lack of resources
    • Human – staff shortages, mobility
    • Skills and knowledge re IS implementation
    • Materials
Injury ICE Response

- In collaboration with WHO and CDC, developed a “How To” manual, adaptable to any environment

- Injury Surveillance Guidelines provide a basis for continuity in a situation of high staff mobility
Injury Surveillance Guidelines

Manual

• Identifies potential data sources

• Describes minimum data that should be collected for major types of injuries

• Provides options for increased data collection if resources are available

• Recommends data analyses and outputs
Injury Surveillance Guidelines ct’d

• Outlines the steps to establishing an ISS
  – Identifying and engaging stakeholders
  – Seeking resources
  – Identifying and overcoming potential obstacles
  – Monitoring and evaluating the system and its outputs
Information Needs & PHA ct’d

• Identify risk/protective factors
  – Comparison of data across environments (sites, sub-populations, countries etc.)
  – Characterization of injury patterns
  – Case-mix comparisons
  – In-depth research studies
Challenge II

• To operate and maintain injury data collection systems
  – What data to collect?
  – Quality of data
  – Comparability and compatibility of injury data
Injury ICE Response

• An injury data classification system, the International Classification of External Cause of Injury (ICECI) that
  – standardises injury data and
  – facilitates comparability

• Initiative to standardise questions for household surveys (work in progress)
ICECI

• The ICECI is
  – Comprehensive (encompasses all types of injuries), with definitions for all terms
  – Multi-axial (covering all factors that describe the circumstances of the event)
  – Flexible (modular with optional levels of detail, appropriate to capacity)
  – Compatible with the ICD-10
International Classification of External Cause of Injury (ICECI)

ALL INJURIES
• Demographics
• Intent
• Mechanism
• Object
• Place
• Activity
• Alcohol Use
• Other Psychoactive Drug Use
• Nature of Injury
• Severity
• Disposition/Outcome

MOTOR VEHICLE INJURIES
• Mode of Transport
• Type
• Counterpart

ASSAULTS/HOMICIDES
• Perpetrator/Victim Relationship
• Circumstances of Assault

SUICIDES
• Proximal Risk Factor

OTHER e.g. SPORTS, OCCUPATIONAL
Place Of Occurrence (First Two Levels of Detail)

Place of Occurrence
Category of place where the injury event occurred

Codes

1   Home, *includes garden, garage and other building attachments*
2   Street/highway
3   School, *includes playground; excludes sports field*
8(98)  Other   *This may be further separated into*
   4   Institution, *includes prison, shelters, old people’s home*
   5   Sports and athletics area
   6   Other Transport area
   7   Industrial/construction
   8   Commercial
   9   Farm, *excludes farmhouse*
  10   Countryside, *water, sea*
9(9)   Unknown
<table>
<thead>
<tr>
<th></th>
<th>Place of Occurrence (Third Level of Detail)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><strong>Sports and athletics area</strong></td>
</tr>
<tr>
<td>51</td>
<td>Sportsground (outside)</td>
</tr>
<tr>
<td>52</td>
<td>Sportshall (inside)</td>
</tr>
<tr>
<td>53</td>
<td>Public swimming centre</td>
</tr>
<tr>
<td>54</td>
<td>Racetrack, racecourse</td>
</tr>
<tr>
<td>55</td>
<td>Riding school</td>
</tr>
<tr>
<td>56</td>
<td>Skating rink, ice palace</td>
</tr>
<tr>
<td>57</td>
<td>Ski area</td>
</tr>
<tr>
<td>58</td>
<td>Other specified sports and athletics area</td>
</tr>
<tr>
<td>59</td>
<td>Unspecified sports and athletics area</td>
</tr>
</tbody>
</table>
Information Needs & PHA ct’d

• Develop and test intervention strategies
  – Evaluation for effectiveness
  – Indicators for monitoring
Challenge III

• To transform data into information such that
  – Data are easily understood and interpreted
  – Data are comparable across countries, in different environments

• Specifically to group 1200 codes into meaningful but standard groups for reporting.
External Cause of Injury Matrix

- Based on the axes of intent and mechanism (from the external cause code)
- 4 x 12 matrix, expandable to 5 x 26
- < 50 groups, suitable for mortality data
- Updated from ICD-9 to ICD-10
- Provision for a third variable
# External Cause of Injury Matrix (ICD-9)

<table>
<thead>
<tr>
<th>Mechanism</th>
<th>Intent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unintentional</td>
</tr>
<tr>
<td>Drowning</td>
<td></td>
</tr>
<tr>
<td>Poisoning</td>
<td></td>
</tr>
<tr>
<td>Fall</td>
<td></td>
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<tr>
<td>Fire/burn</td>
<td></td>
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<tr>
<td>Cut/pierce</td>
<td>$E920$</td>
</tr>
<tr>
<td>$Etc.$</td>
<td></td>
</tr>
</tbody>
</table>
Injury Ice Response –
Data Reporting Frameworks II

• Barell Matrix

  – Framework presenting ICD9-CM codes (morbidity) using body region and nature of injury

  – Basic 5 x 12 expandable to 10 x 12 and to 36 X 12 cells
# Barell Matrix

## The Matrix structure

<table>
<thead>
<tr>
<th>Body Region</th>
<th>Nature of injury</th>
<th>ICD-9-CM injury codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Injury ICE Response –
Data Reporting Frameworks – III

• Injury Mortality Diagnosis Matrix:
  ICD-10
  – Framework that combines the two main axes of injury
description, *viz* the body region and the nature of
injury
  – Reduction from 1169 ICD-10 codes to a minimal 17X16
matrix that captures all of all injury deaths
  – Option of a more detailed 43 x 20 matrix
  – Potential for use with morbidity data
## Injury Mortality Diagnosis Matrix

<table>
<thead>
<tr>
<th>Body region</th>
<th>Nature of injury</th>
<th>Fractures</th>
<th>Dislocations</th>
<th>Internal</th>
<th>Open wound</th>
<th>Amputation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Head and Neck</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Traumatic Brain Injury</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>specific sites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spine and upper back</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>specific sites</td>
<td></td>
<td></td>
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<tr>
<td><strong>Torso</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>specific sites</td>
<td></td>
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<tr>
<td><strong>Extremities</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>specific sites</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unclassifiable</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple body regions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>System wide</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Unspecified</strong></td>
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</tr>
</tbody>
</table>

ICD-10 ‘S’ or ‘T’ code
Challenge IV

• To monitor changes in injury situations and evaluate interventions
  – Valid stable indicators that reflect real changes and not artifacts
  – More accurate identification of risk and protective factors
Injury ICE Response –
Indicators Working Group

- Finalizing a set of valid, robust indicators
- Determining a set of severity scores.
ICE – A Mechanism for Global Injury Data

• Tools for data collection

• Methodologies for analysis

• Frameworks for information dissemination
Conclusion

All ICE efforts serve multiple objectives toward the goal of information for global injury prevention – truly a mechanism of globalization for injury prevention and control.