Multinational Injury Surveillance Pilot Project

Agenda March 27th – 9:00am-9:30am

Trainer of Trainers Workshop
Nairobi, Kenya
March 27th-30th, 2006
Multinational Injury Surveillance Pilot Project

Summary of Modules in:

Multinational Injury Surveillance Study

Steps to Develop and Maintain an Injury Surveillance System

1. Understand the conceptual framework of injury prevention
   - Definition and typology of unintentional and violent Injuries

2. Assess injury data sources and describe the injury problem
   - Identifying strengths and weakness of injury data sources and size the problem

3. Build a coalition to support the injury surveillance system and prevention strategies
   - Identify the partners to include in a coalition to support the injury surveillance system

4. Determine the appropriate methodology for the surveillance system
   - Determine events, data elements, type of surveillance and data collection instruments

5. Define and develop an analysis plan for the surveillance data
   - Calculate indicators, demographic and environmental characteristics

6. Use injury surveillance data
   - Use data to identify preventable injuries, high-risk groups and most appropriate interventions

7. Define an evaluation plan for the surveillance system and monitor prevention strategies
   - Apply the criteria to evaluate the surveillance system

---

Steps to Develop and Maintain an Injury Surveillance System

1. Understand the conceptual framework of injury prevention
   - Definition and typology of unintentional and violent Injuries

2. Assess injury data sources and describe the injury problem
   - Identifying strengths and weakness of injury data sources and size the problem

3. Build a coalition to support the injury surveillance system and prevention strategies
   - Identify the partners to include in a coalition to support the injury surveillance system

4. Determine the appropriate methodology for the surveillance system
   - Determine events, data elements, type of surveillance and data collection instruments

5. Define and develop an analysis plan for the surveillance data
   - Calculate indicators, demographic and environmental characteristics

6. Use injury surveillance data
   - Use data to identify preventable injuries, high-risk groups and most appropriate interventions

7. Define an evaluation plan for the surveillance system and monitor prevention strategies
   - Apply the criteria to evaluate the surveillance system

---

Steps to Develop and Maintain an Injury Surveillance System

1. Understand the conceptual framework of injury prevention
   - Definition and typology of unintentional and violent Injuries

2. Assess injury data sources and describe the injury problem
   - Identifying strengths and weakness of injury data sources and size the problem

3. Build a coalition to support the injury surveillance system and prevention strategies
   - Identify the partners to include in a coalition to support the injury surveillance system

4. Determine the appropriate methodology for the surveillance system
   - Determine events, data elements, type of surveillance and data collection instruments

5. Define and develop an analysis plan for the surveillance data
   - Calculate indicators, demographic and environmental characteristics

6. Use injury surveillance data
   - Use data to identify preventable injuries, high-risk groups and most appropriate interventions

7. Define an evaluation plan for the surveillance system and monitor prevention strategies
   - Apply the criteria to evaluate the surveillance system

---

Steps to Develop and Maintain an Injury Surveillance System

1. Understand the conceptual framework of injury prevention
   - Definition and typology of unintentional and violent Injuries

2. Assess injury data sources and describe the injury problem
   - Identifying strengths and weakness of injury data sources and size the problem

3. Build a coalition to support the injury surveillance system and prevention strategies
   - Identify the partners to include in a coalition to support the injury surveillance system

4. Determine the appropriate methodology for the surveillance system
   - Determine events, data elements, type of surveillance and data collection instruments

5. Define and develop an analysis plan for the surveillance data
   - Calculate indicators, demographic and environmental characteristics

6. Use injury surveillance data
   - Use data to identify preventable injuries, high-risk groups and most appropriate interventions

7. Define an evaluation plan for the surveillance system and monitor prevention strategies
   - Apply the criteria to evaluate the surveillance system
Injury Surveillance

“...the ongoing systematic collection, analysis, and interpretation of injury data for use in planning, implementation, and evaluation.

Injury prevention programs use surveillance data to assess the need for new policies or programs and to evaluate the effectiveness of those that already exist.”
The Injury Pyramid

- Fatal Injuries
- Injuries requiring hospitalization or result in disability
- Injuries requiring emergency treatment
- Injuries resulting in primary care treatment
- Injuries that do not receive attention in a health institution
Injury Classification by Intent

1. **Unintentional injuries** include all injuries related to transportation and traffic incidents or occurring at home, in the work place, in public places, and in natural disasters.

2. **Violence-related injuries** (also called “intentional injuries”) include injuries related to interpersonal, collective, terror-related actions, and self-inflicted violence.
Violence

“The intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.”

World Health Organization
Proportion of Violence-Related Deaths in the World

91% Low- and Middle-Income Countries

9% High-Income Countries

Module 1
## Injury-Related Mortality Worldwide, 1998

<table>
<thead>
<tr>
<th>Injury Deaths</th>
<th>Number of Deaths</th>
<th>Mortality Rate (per 100,000 population)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unintentional</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Road Traffic Injuries</td>
<td>1,170,694</td>
<td>19.9</td>
<td>20.3</td>
</tr>
<tr>
<td>Drowning</td>
<td>495,463</td>
<td>8.4</td>
<td>8.5</td>
</tr>
<tr>
<td>Falls</td>
<td>315,633</td>
<td>5.4</td>
<td>5.4</td>
</tr>
<tr>
<td>Burning</td>
<td>282,178</td>
<td>4.8</td>
<td>4.8</td>
</tr>
<tr>
<td>Poisoning</td>
<td>251,881</td>
<td>4.3</td>
<td>4.3</td>
</tr>
<tr>
<td>Other Unintentional Deaths</td>
<td>977,259</td>
<td>16.6</td>
<td>16.9</td>
</tr>
<tr>
<td><strong>Violence-Related</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td>947,697</td>
<td>16.1</td>
<td>16.4</td>
</tr>
<tr>
<td>Homicide</td>
<td>735,972</td>
<td>12.5</td>
<td>12.7</td>
</tr>
<tr>
<td>War</td>
<td>588,050</td>
<td>10.0</td>
<td>10.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,764,825</td>
<td>97.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Ecological Model for Understanding Violence

Risk Factors for Youth Violence

Module 1

Societal
- Rapid demographic growth and accelerating urbanization
- Unemployment and grossly inadequate housing
- Quality of government in a country

Community
- Presence of gangs, guns, and drugs in a locality
- Lack of rules, norms, obligations, reciprocity, and trust that exists in social relations and institutions

Relationship
- Poor parental supervision
- Recorded physical abuse and neglect as a child
- Low level of family cohesion

Individual
- Poor behavioral control and attention problems
- Hyperactivity
- Impulsivity
Describe the Magnitude of the Injury Problem

- The availability of reliable health statistics generally reflects the country’s level of development.

- In some countries, reliable data about the local status of health conditions, or about the leading causes of death, are not available.

- Preliminary estimates of basic indicators (i.e., number and percentage of injuries) will begin to give you an idea about the problem of injuries in the region.
## Data Sources for an Injury Surveillance System

<table>
<thead>
<tr>
<th>Strengths?</th>
<th>Weaknesses?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Sector</td>
<td></td>
</tr>
<tr>
<td>Police Department</td>
<td></td>
</tr>
<tr>
<td>Forensic Medicine</td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td></td>
</tr>
<tr>
<td>Nongovernmental offices</td>
<td></td>
</tr>
<tr>
<td>District Attorney</td>
<td></td>
</tr>
<tr>
<td>Transportation office</td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td></td>
</tr>
</tbody>
</table>

---

**Module 2**
Injury Death Process in Cali, Colombia

Victim in scene of death

Police are the first authority on the scene and collect preliminary data about victim and context.

District attorney is on the scene collecting information about circumstances, victim, aggressor, etc., and transporting the body to the forensic office.

Pathologists conduct the autopsy, determine the cause of death, and prepare the death certificate.

National Statistics Office

A public health office receives and systematizes the death certificate and assigns the ICD codes, and send the death certificates to the National Statistics Office.

Victim is buried by family and relatives.

Module 2
## Probable Data Sources

### Module 2

#### Data Sources

<table>
<thead>
<tr>
<th>Events</th>
<th>District Attorney</th>
<th>Police Office</th>
<th>Forensic Medicine</th>
<th>Public Health</th>
<th>Transport Office</th>
<th>Family Community</th>
<th>Non-government Offices</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fatal Injuries</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport - Related deaths</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Unintentional Deaths</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nonfatal Injuries</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homicide Attempt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suicide Attempt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport-Related Injuries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Unintentional Injuries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic Violence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child Maltreatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elderly Abuse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Number of Homicides in Cities of Colombia — 1999

<table>
<thead>
<tr>
<th>City</th>
<th>Forensic Medicine</th>
<th>Police Department</th>
<th>Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palmira</td>
<td>185</td>
<td>95</td>
<td>90</td>
</tr>
<tr>
<td>Buga</td>
<td>106</td>
<td>81</td>
<td>25</td>
</tr>
<tr>
<td>Tulua</td>
<td>166</td>
<td>87</td>
<td>79</td>
</tr>
<tr>
<td>Cartago</td>
<td>210</td>
<td>83</td>
<td>127</td>
</tr>
<tr>
<td>Buenaventura</td>
<td>312</td>
<td>131</td>
<td>182</td>
</tr>
<tr>
<td>Roldanillo</td>
<td>94</td>
<td>85</td>
<td>9</td>
</tr>
<tr>
<td>Zarzal</td>
<td>65</td>
<td>63</td>
<td>2</td>
</tr>
</tbody>
</table>
Data Elements to Include in Surveillance System

- **Variables:** Demographics, place, time, circumstances, other
- **Codes:** CIE-10, CIE-9-CM, ICECI
- **Case Definition:** CIE-10, FBI, police, transportation, other
# Variables Included in Injury Surveillance Systems

<table>
<thead>
<tr>
<th>WHO Guidelines</th>
<th>PAHO Guidelines</th>
<th>Fatal Injury Surveillance System Cali, Colombia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
<td>Optional</td>
<td></td>
</tr>
<tr>
<td><strong>DEMOGRAPHIC VARIABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identifier</td>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Employment</td>
<td>Employment (only in cases of suicide and other unintentional deaths)</td>
</tr>
<tr>
<td>Socioeconomic status (SES)</td>
<td>SES</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other psychoactive substances</td>
<td>Alcohol level</td>
<td>Alcohol level</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TIME VARIABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of injury</td>
<td>Date of act</td>
<td>Date of event</td>
</tr>
<tr>
<td>Time of injury</td>
<td></td>
<td>Time of occurrence</td>
</tr>
<tr>
<td><strong>PLACE VARIABLES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neighborhood</td>
<td>Place of occurrence – Neighborhood and SES</td>
<td></td>
</tr>
<tr>
<td>Place of occurrence</td>
<td>Place of residence</td>
<td>Place of residence – Neighborhood and SES</td>
</tr>
<tr>
<td><strong>CHARACTERISTICS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanism of injury</td>
<td>Type of weapon</td>
<td>Mechanism of injury</td>
</tr>
<tr>
<td>Motive for the act</td>
<td>Context</td>
<td></td>
</tr>
<tr>
<td>Relationship victim/aggressor</td>
<td>Aggressor known / unknown</td>
<td></td>
</tr>
<tr>
<td>Special category of people or risk group</td>
<td>Special category of people or risk group</td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td></td>
<td>Intention (homicide, suicide, transport-related, other unintentional deaths)</td>
</tr>
<tr>
<td>Nature of injury</td>
<td>ICD codes, Severity, Disposition</td>
<td>For motor vehicle-related injuries: mode of transport, type of victim, and vehicle involved</td>
</tr>
</tbody>
</table>
### Example

**A Typology of Violence Using ICD Codes**

<table>
<thead>
<tr>
<th>Nature of violence</th>
<th>Self directed</th>
<th>Interpersonal</th>
<th>Collective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Family / partner</td>
<td>Community</td>
<td></td>
</tr>
<tr>
<td>Suicidal behavior</td>
<td>F10-F19 Mental and behavioral disorders due to psychoactive substance use</td>
<td>Y07 Other maltreatment syndromes</td>
<td>X85-Y09 Assault Y 87.1 Sequelae of assault Y 08 Assault by other specified means Y 09 Assault by unspecified means</td>
</tr>
<tr>
<td>Selfabuse</td>
<td>X60-X84 Intentional self-harm Y 87.0 Sequelae of intentional self-harm</td>
<td>P04.2-4</td>
<td>Y35-Y36 Legal intervention and operations of war</td>
</tr>
<tr>
<td>Child</td>
<td>Y07 Other maltreatment syndromes</td>
<td>Y07 Other maltreatment syndromes</td>
<td></td>
</tr>
<tr>
<td>Partner</td>
<td>Y05 Sexual assault by bodily force</td>
<td>Y07 Other maltreatment syndromes</td>
<td></td>
</tr>
<tr>
<td>Elder</td>
<td>Y05 Sexual assault by bodily force. Includes rape (attempted), sodomy (attempted)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquaintance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stranger</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Module 4
Other Public Health Classifications

**ICECI**: International Classification of External Causes of Injury is a related classification in the World Health Organization’s Family of International Classification of Diseases and Related Health Problems.

**ICD-9-CM**: ICD-9-Clinical Modification is widely used to code external cause of injury for visits in hospitals, emergency departments, and ambulatory care settings across the United States.
### Case Definition for Violent Injuries:
#### Public Health vs. Law Enforcement in the United States

<table>
<thead>
<tr>
<th>Public Health (ICD-10)</th>
<th>Law Enforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assault (X85–Y09):</strong></td>
<td><strong>Criminal Homicide:</strong></td>
</tr>
<tr>
<td>Includes homicide and injuries inflicted by another person with intent to injure or kill, by any means.</td>
<td>Murder and no negligent manslaughter: the willful killing of one human being by another.</td>
</tr>
<tr>
<td>Excludes: Legal intervention and operations of war. Assaults are classified by mechanism</td>
<td><strong>Aggravated Assault:</strong></td>
</tr>
<tr>
<td></td>
<td>An unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily injury.</td>
</tr>
<tr>
<td></td>
<td><strong>Other Assaults:</strong></td>
</tr>
<tr>
<td></td>
<td>Assaults and attempted assaults in which no weapons are used and do not result in serious or aggravated injury to the victim.</td>
</tr>
<tr>
<td><strong>Legal Intervention (Y35):</strong></td>
<td><strong>Justifiable Homicide (Not a Crime):</strong></td>
</tr>
<tr>
<td>Includes legal intervention according to the mechanism</td>
<td>Killing of a felon by a law enforcement officer in the line of duty. The killing of a felon, during the commission of a felony, by a private citizen.</td>
</tr>
<tr>
<td><strong>Neglect and Abandonment (Y06):</strong></td>
<td><strong>Manslaughter by Negligence:</strong></td>
</tr>
<tr>
<td>Classified according to the perpetrator: Spouse or partner, parent, acquaintance or friend, other specified persons, unspecified person.</td>
<td>The killing of another person through gross negligence.</td>
</tr>
<tr>
<td><strong>Operations of War (Y36):</strong></td>
<td></td>
</tr>
<tr>
<td>Includes: injuries to military personnel and civilians caused by war and civil insurrection and injuries due to operations of war occurring after cessation of hostilities</td>
<td></td>
</tr>
</tbody>
</table>

---

**Module 4**
Frequency of Data Collection

How often can the data be collected?
How often must data be analyzed and disseminated?

- Daily – weekly
- Monthly
- Every year

Active collection: Injured people are interviewed, with follow-up.

Passive collection: Relevant information is collected while performing other routine tasks.
Database Structure Software: Epi Info

System Maintenance

- Reduces errors
- Improves system scope and services

- Clearly written procedures are needed for (1) securing physical and electronic records and (2) controlling access to and production of records.

- Only one person should have the authority to access the system and to assign and change passwords.
Core Staff

Program manager: Organizes and supervises the process of data collection. Acts as spokesperson.

Data manager
Research analyst
Coordinator
Key Personnel for System Operation

Advisory Board

- Provide technical advice, strategic planning, and support for success of the reporting system

- Law enforcement
- Coroner/medical examiner
- Vital registrars
- Health care
- Policy makers
- Business
- Community organizations
- Researchers/educators

Stakeholders

- Define activities and strategies to prevent injuries: government, health sector, law enforcement, transportation offices

Module 4
The analysis and interpretation of surveillance data establishes the foundation for many observational studies, placing surveillance at the forefront of the spectrum of descriptive epidemiology.

If analyses are implemented as part of a routine surveillance program, results can be monitored as the initial data are updated with subsequent reports.
Recommendations

- Knowledge of day-to-day strengths and weaknesses of data collection methods and reporting processes can provide a “real-world” sense of emerging trends.

- Although surveillance data are collected individually, part of the analysis is to have a global image of the problem under surveillance.

- Proceed from the simplest to the most complex analysis. Begin with questions such as:
  
  - “What is the percentage of injury deaths among all mortality causes?”
  
  - “How many injuries occurred according to intention?”
Analysis Process

- **First step**: To describe the size of the injury problem, determine the frequency and percentage of events.

- **Second step**: Calculate crude, specific, and adjusted rates for each type of injury.

- **Third step**: Determine trends of the injury events, if these data are available.
## Injury Mortality in El Salvador and Cali, Colombia, 2000

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>El Salvador</th>
<th></th>
<th>Cali</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage</td>
<td>Number</td>
<td>Percentage</td>
</tr>
<tr>
<td><strong>Unintentional Deaths</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Vehicle-Related</td>
<td>1,629</td>
<td>26.8 %</td>
<td>467</td>
<td>17.9 %</td>
</tr>
<tr>
<td>Other Unintentional Deaths</td>
<td>933</td>
<td>15.4 %</td>
<td>104</td>
<td>3.9 %</td>
</tr>
<tr>
<td><strong>Violence-Related Deaths</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homicides</td>
<td>2,696</td>
<td>44.3 %</td>
<td>1,961</td>
<td>74.9 %</td>
</tr>
<tr>
<td>Suicides</td>
<td>815</td>
<td>13.5 %</td>
<td>85</td>
<td>3.3 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6,073</td>
<td>100 %</td>
<td>2,617</td>
<td>100 %</td>
</tr>
</tbody>
</table>
Maps are the graphic representation of data using location and geographic coordinates.

- Spot map
- Area map (chloropleth, shaded)
- Black spots
Homicides tend to occur in low-SES neighborhoods (70%); Cali, Colombia; 2001

- High proportion of homicides are stabbings among non-residents
- High proportion of homicides with firearms among youth
- A higher proportion of homicides against women
- 100% of homicides are with firearms

Source: Fatal Injury Surveillance System, Cali, Colombia
Example

Module 5

Black Spots Map for Road Traffic Injuries
Bogotá, Colombia, 2000

Source: Sistema Unificado de Información de Violencia y Delincuencia (SUIVD); Bogotá, Colombia
Exercise

Pedestrian Deaths in Cali, Colombia; 2001
Place of Occurrence

Source: Fatal Injury Surveillance System, Cali. Data from: Police, Forensic Medicine, District Attorney, Transportation Office.
Plan to Disseminate the Results

- Prepare the message.
- Define the audience.
- Select the channel.
- Market the message.
- Evaluate the impact.
Plan to Disseminate the Results

- Present data to the public in an appealing format.
- Use language the public understands (professional versus public language).
- Keep it simple. Provide only the most important facts.
Sample Outline for an Injury Surveillance System Report

I. **Introduction**: Brief description of the injury surveillance system, the purpose, related prevention activities, and the objective of the report

II. **Leading causes of death**: Frequency, percentage, and rank of injuries among all causes of death

III. **Leading causes of injury mortality and morbidity**: Frequency, percentage, and crude rates, emphasizing the highest indicators

IV. **Years of potential life lost (YPLL)**

V. **Cost of injuries, comparing local data if available**

VI. **Priority injuries identified in the region**

VII. **Recommendations for prevention strategies**

*Module 5*
Recipients

- Stakeholders
- Institutions that are data sources: police, forensic medicine, transportation
- Hospitals, emergency rooms
- Health professionals, researchers
- Personnel working in surveillance system
- Mass media directors
- Grassroots organizations
Means of Delivery

- Health department newsletter
- Public service announcements
- Press releases
- Scientific journals
- Flyers
- Periodical reports
- Meetings: scientific/stakeholders
- Annual report
- Website
- Newspaper

Module 5
Examples

- The injury surveillance system from Bogotá publishes a monthly bulletin. The bulletin includes data analyses, recommendations, and evaluations of strategies that have been implemented.

- Cisalva Institute in Cali prepare a report every three months, based on data from fatal injury surveillance system. This report is sent to mass media and stakeholders in the city.

- The Injury Surveillance System in Emergency Rooms in El Salvador produces a weekly bulletin.

- In Nicaragua, articles have been published using data from the system.
Surveillance Systems and Prevention Activities Operate in a Social, Political, and Legal Framework

Social
Is it acceptable to carry firearms?

Political
Does the mayor know what injury information the police have?

Legal
Is there an age limit to buy liquor?

Module 3
Identify Organizations Working in Injury Prevention and Control

- **Local**: Health care providers, police, educators, social workers, government officials, and community organizations
- **National**: Government (Health, Justice, Labor), nongovernmental offices, etc.
- **International**: International donors, bilateral programs, religious organizations (examples: World Bank, United Nations, Red Cross, Inter-American Development Bank)
A **coalition** is an alliance of organizations working together to achieve a common purpose.
Keys to a Successful Coalition

- Commitment of lead agency
- Planned recruitment of coalition members
- Effective core planning group
- Ownership and commitment by coalition members
- Successful implementation of a pilot project
- Respected leadership
- Recognition of coalition members
## Potential Coalition Partners

<table>
<thead>
<tr>
<th>Sector</th>
<th>Institutions</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health</strong></td>
<td>Ministry of Health&lt;br&gt;Hospitals&lt;br&gt;Health Centers&lt;br&gt;Health Posts</td>
<td>Epidemiologists, doctors, nurses, health educators, health promoters, paramedics, and other health workers</td>
</tr>
<tr>
<td><strong>Justice</strong></td>
<td>Forensic Medicine Offices (Coroner/Medical Examiner)&lt;br&gt;Courts&lt;br&gt;Public Defenders' Offices&lt;br&gt;Prosecutors’ Offices&lt;br&gt;Family Services or Counseling</td>
<td>Forensic pathologists, judges, public defenders, prosecutors or their assistants, directors or professional staff of family services or family counseling</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>Police (Homicide Investigation Office)&lt;br&gt;Security Companies</td>
<td>Regional or local police chiefs, statistical officers</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>Transportation Departments and Offices</td>
<td>Department directors or traffic police, statistical officers</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Planning Departments&lt;br&gt;National and Provincial Statistical Departments</td>
<td>Statisticians, geographers</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Universities&lt;br&gt;Colleges&lt;br&gt;Schools</td>
<td>Researchers, professors, and student leaders</td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td>Community Organizations&lt;br&gt;Youth and Mothers’ Organizations</td>
<td>Community leaders, youth leaders, community groups</td>
</tr>
<tr>
<td><strong>Private Organizations</strong></td>
<td>Nongovernmental Organizations&lt;br&gt;Human Rights Groups&lt;br&gt;Insurance Agencies</td>
<td>Spokespersons and leaders of private organizations, statisticians</td>
</tr>
<tr>
<td><strong>Political</strong></td>
<td>National, Regional, and Local Authorities</td>
<td>Staff in the president’s, governor’s, or mayor’s offices</td>
</tr>
<tr>
<td><strong>Media</strong></td>
<td>Television, Radio, Newspapers</td>
<td>Journalists and personnel working in mass media</td>
</tr>
</tbody>
</table>
Stakeholders Meeting

- Describe what is known and not known about the problem of injuries in your city or community.
- Discuss the opportunities an injury surveillance system offers to combat myths and misunderstandings; to learn about the size of the problem; and to define, develop, and monitor prevention strategies.
- Describe potential challenges, obstacles to success, and key contacts and resources.
- Establish a list of next steps for participants, including the development of an advisory board.
Criteria for Prioritizing Health Events

- Magnitude
- Severity
- YPLL - DALYs
- Trend
- Vulnerability
- Local, national, and international interest to prevent the problem
- Cost
## Criteria for Prioritizing Health Events

<table>
<thead>
<tr>
<th>Prevention and Control Capacity (possibilities for controlling, local interests, and other sectors’ interests)</th>
<th>Event Importance (magnitude, severity, trend, cost)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td>HIGH</td>
<td>Low importance and good control and prevention capacity = High priority for research</td>
</tr>
<tr>
<td>LOW</td>
<td>LOW</td>
<td>Low importance and low control and prevention capacity = Not a priority</td>
</tr>
<tr>
<td>HIGH</td>
<td>LOW</td>
<td>Low importance and good control and prevention capacity = Low priority for prevention and control</td>
</tr>
</tbody>
</table>

**Module 6**
Information Necessary to Apply Indicators

General Information
- Leading causes of death
- Frequency, proportion, and crude and adjusted rates
- YPLL
- Trend

Specific Information
- Homicides
- Motor vehicle-related deaths
- Leading causes of injury morbidity
Information Necessary to Apply Indicators

Costs

- Direct
- Indirect
- Economic and human

**DALYs** (if the information to calculate this indicator is available)
Use the Ecological Model to Identify Etiological Factors for Violence-related Injuries

The Ecological Model helps to identify and organize multiple levels of influence that affect behavior. Violence is considered the product of interactions at multiple levels:

- Individual
- Relationship
- Community
- Societal

To explain the Ecological Model, an example will be presented and a work group will perform an exercise using local data.
### Ecological Model of Factors Associated with Intimate Partner Violence

<table>
<thead>
<tr>
<th>Level</th>
<th>Etiological Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual</strong></td>
<td><em>Being male; witnessing marital violence as a child; absent or rejecting father; being abused as a child; alcohol or drug use</em></td>
</tr>
<tr>
<td><strong>Victim</strong></td>
<td><em>Being female; lack of full-time employment; physical abuse after report of earlier abuse</em></td>
</tr>
<tr>
<td><strong>Relationship</strong></td>
<td>Marital conflict; male control of wealth and decision-making in the family</td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td>Poverty; low socioeconomic status; unemployment; associating with delinquent peers; isolation of women and family; inadequate legal protections</td>
</tr>
<tr>
<td><strong>Society</strong></td>
<td>Norms granting men control over female behavior; acceptance of violence as a way to resolve conflict</td>
</tr>
</tbody>
</table>

*Module 6*
## Ecological Model of Factors Associated with Youth Violence

<table>
<thead>
<tr>
<th>Level</th>
<th>Etiological Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual</strong></td>
<td>Psychological and personality factors</td>
</tr>
<tr>
<td></td>
<td>Impulsiveness</td>
</tr>
<tr>
<td><strong>Relationship</strong></td>
<td>Peers involve in crime</td>
</tr>
<tr>
<td></td>
<td>Poor parenting practices</td>
</tr>
<tr>
<td><strong>Community</strong></td>
<td>Concentration of poverty</td>
</tr>
<tr>
<td></td>
<td>Local illicit drug trade</td>
</tr>
<tr>
<td><strong>Society</strong></td>
<td>Inequalities of gender, economics, access to health care,</td>
</tr>
<tr>
<td></td>
<td>education</td>
</tr>
<tr>
<td></td>
<td>Weak police/criminal justice system</td>
</tr>
</tbody>
</table>
### Proven or Promising Strategies to Prevent Road Traffic Injuries

**Module 6**

#### To Increase the Use of Child Safety Seats

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child safety seat use laws</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Community-wide information + enhanced enforcement campaigns</td>
<td>Recommended (sufficient evidence)</td>
</tr>
<tr>
<td>Distribution + education programs</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Incentive + education programs</td>
<td>Recommended (sufficient evidence)</td>
</tr>
<tr>
<td>Education-only programs</td>
<td>Insufficient evidence to determine effectiveness</td>
</tr>
</tbody>
</table>
## Proven or Promising Strategies to Prevent Road Traffic Injuries

### To Increase the Use of Safety Belts

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat belt use laws</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Primary enforcement laws (versus secondary enforcement laws)</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Enhanced enforcement programs</td>
<td>Recommended (strong evidence)</td>
</tr>
</tbody>
</table>
# Proven or Promising Strategies to Prevent Road Traffic Injuries

## Module 6

### To Reduce Alcohol-Impaired Driving

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.08 % blood alcohol concentration (BAC) laws</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Lower BAC laws for young or inexperienced drivers</td>
<td>Recommended (sufficient evidence)</td>
</tr>
<tr>
<td>Minimum legal drinking age laws</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Sobriety checkpoints</td>
<td>Recommended (strong evidence)</td>
</tr>
<tr>
<td>Server intervention training programs (face-to-face instruction with management support)</td>
<td>Recommended (sufficient evidence)</td>
</tr>
<tr>
<td>Intervention</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Home visits to new mothers</td>
<td>Promising strategy: It appears that visits by nurses are more effective</td>
</tr>
<tr>
<td>School-based programs to prevent child sexual abuse</td>
<td>One recent meta-analysis concluded that programs to prevent victimization were fairly effective in teaching children concepts and skills related to protection against sexual abuse</td>
</tr>
</tbody>
</table>
# Proven or Promising Programs to Prevent Violence

## Module 6

### To Reduce Antisocial and Aggressive Behavior in Children and Adolescents

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving competency and social skills with peers; promoting positive, friendly, and cooperative behavior</td>
<td>Demonstrated to be effective in reducing youth violence or risk factors for youth violence</td>
</tr>
<tr>
<td>Warm and supportive relationship with a positive adult role model: mentoring programs</td>
<td>Is thought to be a protective factor for youth violence</td>
</tr>
</tbody>
</table>
## Proven or Promising Programs to Prevent Violence

### Module 6

#### To Reduce Abuse between Intimate Partners

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training health workers to identify and respond to abuse between intimate partners</td>
<td>Active screening for abuse and questioning patients about their possible histories of suffering violence by intimate partners is generally considered good practice in this field. However, little systematic evaluation has been carried out to determine whether screening for abuse can improve the safety of women.</td>
</tr>
</tbody>
</table>
Use Surveillance Data to Inform Injury Prevention

1. Use surveillance data to identify priority injuries in the region.

2. Identify potential etiological factors of priority injuries.


4. Identify the most appropriate intervention for the injuries in your region.

Module 7
Step 1. Engage Stakeholders in the Evaluation

Coalition partners and other stakeholders are important users of the injury surveillance results. Involve them in the evaluation process.

This group includes:

- Local government
- Public health officers
- Representatives of affected communities
- Nongovernment offices
- Mass media
Step 2. Describe the Surveillance System to be Evaluated

Describe the public health importance of the injury event under surveillance. Use measures such as:

- Frequency: Number, incidence, mortality rates, YPLL
- Indices of severity
- Associated disparities or inequities
- Associated costs
- Preventability
- Public interest

Describe the purpose and operation of the system.

Module 7
Step 3. Focus the Evaluation Design

The evaluation process must be planned to ensure that time and resources are used efficiently.

- State the purpose of the evaluation.
- Identify stakeholders who will receive the evaluation results.
- State what questions will be answered by the evaluation.
- State how the results will be used.
- Define the standards that will be used to assess the system.
Step 4. Gather Credible Evidence About the Surveillance System Performance

**Simplicity:** System structure; ease of operation. A chart showing the flow of data and the lines of response can help.

**Flexibility:** How a system has responded to a new demand.

**Data Quality:** Percentage of “unknown” or “blank” responses to items or wrong coding easily measures this attribute.

**Acceptability:** The willingness of people and organizations to participate in the surveillance system.

**Sensitivity:** Percentage of injuries detected by the surveillance system. A “gold standard” is required.
Example
Calculation of Sensitivity: Surveillance System in Emergency Department; 2002

<table>
<thead>
<tr>
<th>Injury Patients registered by Injury Surveillance System</th>
<th>Injury Patients registered by the “Gold standard”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><strong>True Positives</strong></td>
</tr>
<tr>
<td></td>
<td>26,991</td>
</tr>
<tr>
<td></td>
<td>Injury patients correctly registered by the surveillance system</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td></td>
<td><strong>False Positives</strong></td>
</tr>
<tr>
<td></td>
<td>491</td>
</tr>
<tr>
<td></td>
<td>Patients incorrectly registered by the surveillance system as injury patients</td>
</tr>
<tr>
<td></td>
<td>B</td>
</tr>
<tr>
<td></td>
<td><strong>Yes</strong></td>
</tr>
<tr>
<td></td>
<td>A+C</td>
</tr>
<tr>
<td></td>
<td>28,311</td>
</tr>
<tr>
<td></td>
<td><strong>No</strong></td>
</tr>
<tr>
<td></td>
<td><strong>False Negatives</strong></td>
</tr>
<tr>
<td></td>
<td>1,320</td>
</tr>
<tr>
<td></td>
<td>Injury patients incorrectly not registered by the surveillance system</td>
</tr>
<tr>
<td></td>
<td>C</td>
</tr>
<tr>
<td></td>
<td><strong>True Negatives</strong></td>
</tr>
<tr>
<td></td>
<td>68,680</td>
</tr>
<tr>
<td></td>
<td>Patients correctly not registered by the system, because the cause was different than injury</td>
</tr>
<tr>
<td></td>
<td>D</td>
</tr>
<tr>
<td></td>
<td><strong>No</strong></td>
</tr>
<tr>
<td></td>
<td><strong>A+B</strong></td>
</tr>
<tr>
<td></td>
<td>27,482</td>
</tr>
<tr>
<td></td>
<td><strong>C+D</strong></td>
</tr>
<tr>
<td></td>
<td>70,000</td>
</tr>
<tr>
<td></td>
<td><strong>A+B+C+D</strong></td>
</tr>
<tr>
<td></td>
<td>97,482</td>
</tr>
</tbody>
</table>

Sensitivity = A / (A+C): 26,991 / 28,311 = 95.33
Step 5. Justify and State Conclusions; Make Recommendations

Evaluation conclusions are reached through good judgment and methods:

- Analysis
- Synthesis
- Interpretation

Recommendations should address:

- Modification or continuation of the surveillance system
Step 6. Use Evaluation Findings and Share Lessons Learned

Prepare a strategy for communicating evaluation findings and recommendations.

Tailor materials:

- To those who provide evaluation data
- To personnel who operate the system
- To stakeholders
Module 6

Resources

- *Violence in Latin America and the Caribbean: A Framework for Action* (IADB 1999)
- *Violence Against Women: The Health Sector Responds* (PAHO 2003)
Internet Resources

- www.prevencionviolencia.org.co
- www.cdc.gov/ncipc
- www.surgeongeneral.gov/library/youthviolence
- www.thecommunityguide.org
- www.cdc.gov/mmwr
- www.hwysafety.org
- http://depts.washington.edu/hiprc
Internet Resources

- www.cpsc.gov
- www.aap.org/family/tippmain.htm
- www.alaska-ipc.org/
- www.iadb.org
- www.who.org
- www.paho.org
- www.worldbank.org
Module 6

Resources

- *Violence in Latin America and the Caribbean: A Framework for Action* (IADB 1999)
- *Violence Against Women: The Health Sector Responds* (PAHO 2003)
Module 6

Internet Resources

- www.prevencionviolencia.org.co
- www.cdc.gov/ncipc
- www.surgeongeneral.gov/library/youthviolence
- www.thecommunityguide.org
- www.cdc.gov/mmwr
- www.hwysafety.org
- http://depts.washington.edu/hiprc
Internet Resources

- www.cpsc.gov
- www.aap.org/family/tippmain.htm
- www.alaska-ipc.org/
- www.iadb.org
- www.who.org
- www.paho.org
- www.worldbank.org