Development and Piloting of National Injury Surveillance System of Sri Lanka (NISSSL)

Project Period Jan-Jun 2013

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Disclaimer

This presentation was prepared by Dr. Achala Jayatilleke in his personal capacity. The opinions expressed in this presentation are the author's own and do not reflect the view of the Centers for Disease Control and Prevention, the Department of Health and Human Services, or the United States government.
Injury – A Public Health Issue

- Injuries are a major global public health issue
- Low- and middle-income countries affected more
- Leading cause of death - 15y to 44y males
- Leading cause of hospitalization in SL
- Most of the injuries are predictable, hence preventable
- Prevention/control is the solution
Injury Prevention – PH Approach

- Population based
- Evidence based
- Emphasizes collective action
- Multidisciplinary
- Adopt scientific methods
- Emphasizes prevention

Adopted from WHO, 2001
Injury Surveillance in Sri Lanka

- Injury surveillance was a long felt need in SL
- Piloted an injury surveillance system in 2008
- System was evaluated in 2011
- Major drawback - lack of facilities to accommodate changes of the data collection tool without a system change and sustainability
- Recommended to establish a new system
Objectives

General objective

To develop and pilot web-based National Injury Surveillance System for Sri Lanka (NISSSL)

Specific objectives

- To review the previous stand-alone injury surveillance system
- To analyse system requirements
- To develop the data collection tools
- To develop an in-house, web-based software using FOSS programming languages and database
- To pilot the NISSSL
- To train the staff of the relevant hospitals
- To monitor and evaluate the NISSSL
- To Enhance the NISSSL
- To establish a data backup policy
- To explore the possibilities of recovering and exporting existing data
Methods

Activities completed during the project period

■ Reviewed the previous injury surveillance system

■ Analyzed system requirements
  - Stakeholders were identified and had meetings and interviews with
  - System requirement specifications were listed

■ Revised and developed the data collection tool – Injury Surveillance Record (ISR)

■ Developed in-house web-based software using free and open source resources

■ Piloted the system at Base Hospital, Horana
System Architecture

Ministry of Health

Central Server

Provincial Ministry of Health

Regional Director

Provincial Director

Hospital

Data Entry Operator

Hospital Administrator

Local Server
User Interfaces 1

National Injury Surveillance System of Sri Lanka

Hospital: Base Hospital Horana

<table>
<thead>
<tr>
<th>General Information</th>
<th>Place and Intent</th>
<th>Mechanism of Injury</th>
<th>Safety Measures and First aid</th>
<th>Nature and Severity</th>
<th>Disposition</th>
</tr>
</thead>
</table>

**Timing**

- Admission Date
- Admission Time
- Admission Type: Direct, Transfer
- Filled Date
- Filled Time
- Date of Injury
- Time

**Basic Details**

- Gender: Male, Female
- Age
- If Infant: Month, Days
- Residence

- Ethnicity: Sinhala, Tamil, Muslim, Other
- Religion: Buddhist, Hindu, Islam, Catholic/Christian, Other
- Occupation

**Hospital Details**

- Filed By
- Ward

Update, Save, Reset, Cancel, Help
## User Interfaces 2

### National Injury Surveillance System of Sri Lanka

**Hospital:** Base Hospital Horana  
**BHT:** [Blank]

<table>
<thead>
<tr>
<th>General Information</th>
<th>Place and Intent</th>
<th>Mechanism of Injury</th>
<th>Safety Measures and First aid</th>
<th>Nature and Severity</th>
<th>Disposition</th>
</tr>
</thead>
</table>

#### Where did the injury occur?
- Private House/home including yard
- Street/highway/road
- Industrial and construction area
- Medical service area
- Open land, beach, forest, jungle
- Residential Institution
- Railway line, station
- Public administrative area
- Farm or place of primary production
- Other
- School, institutional educational area
- Trade/service area
- Sports/athletic area
- Sea, lake, river, dam, borehole, well
- Unspecified/Unknown

#### What was the apparent intent?
- Unintentional
- Legal intervention/war operations
- Suicide/self-harm
- Undetermined
- Assault/homicide - Relationship
- Unspecified/Unknown
# User Interfaces 3

## General Information

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Base Hospital Horana</th>
<th>BHT</th>
</tr>
</thead>
</table>

## Place and Intent

- **Road traffic incident**
  - **Mode of transport**
    - Walking
    - Three Wheeler
    - Lorry/Truck
    - Unspecified/Unknown
  - **Counterpart**
    - Pedal Cycle
    - Car
    - Van/Pick up
    - Fixed stationary object
    - Unspecified/Unknown
  - **Road user type**
    - Pedestrian
    - Other
  - **Other transport incident**

- **Fall**
  - From level
  - Sharp force (Stab/cut)
  - Burn (Smoke/fire/fire)
  - Suffocation/choke/hanging
  - Envenomation

## Mechanism of Injury

- **Pedal Cycle**
- **Car**
- **Van/Pick up**
- **Motor Cycle**
- **Bus**
- **Three Wheeler**
- **Lorry/Truck**
- **Animal**
- **Other**
- **Driver/ Rider**
- **Unspecified/Unknown**
- **Blunt force (by a person/animal)**
- **From height**
- **Sharp force (Animal bite)**
- **Burn (Contact with heat/scald)**
- **Electrocution**
- **Other**
- **Drowning/submersion**
- **Poisoning**
- **Explosive blast/gunshot**
- **Unspecified/Unknown**

## Safety Measures and First aid

- **Playing/sports**
- **Working for income**
- **Education**
- **Cooking**
- **Working other**
- **Other**
- **Resting/leisure**
- **Travel to/from work**
- **Unspecified/Unknown**

## Nature and Severity

## Disposition

## Special categories

- **Work-related**
  - Natural disaster
  - Sexual violence
  - Child maltreatment
  - Sport-related
  - Intimate Partner Violence
  - Elder maltreatment
# User Interfaces 4

## National Injury Surveillance System of Sri Lanka

**Hospital:** Base Hospital Horana  
**BHT:**

### General Information

**What is the outcome of the injury?**

- Discharged with full recovery
- Discharged with permanent disability
- Discharged after the initial treatment for follow up
- Transferred for higher level of care facility
- Transferred for lower level care facility
- Death at ETU/PCU/ward
- Death on / before arrival
- Left against medical advice
- Other

**Date of discharge/death/transfer**

- Date
- Month
- Year

### Place and Intent

### Mechanism of Injury

### Safety Measures and First aid

### Nature and Severity

### Disposition

### Diagnosis

### Summary
Piloting

- At Base Hospital Horana
- March & April 2013
- 654 patients
- Data collected by nursing officers
- Results presented to the local stakeholders
# Results

## Number of injuries by intent and mechanism

<table>
<thead>
<tr>
<th>Intent</th>
<th>Mechanism</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unintentional</td>
<td>Road Traffic Injuries</td>
<td>173</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Other Transport Injuries</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Other Unintentional Injuries</td>
<td>389</td>
<td>59</td>
</tr>
<tr>
<td>Intentional</td>
<td>Assault/Homicide</td>
<td>48</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Self-harm/ Suicide</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>Legal interventions/war</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Undetermined</td>
<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unknown/Unspecified</td>
<td></td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>654</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
## Results

Number of injuries by age group, sex and intent

<table>
<thead>
<tr>
<th>Intent</th>
<th>Age groups</th>
<th>0-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25-44</th>
<th>45-64</th>
<th>≥65</th>
<th>All ages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td><strong>Unintentional</strong></td>
<td></td>
<td></td>
<td>13</td>
<td>15</td>
<td>8</td>
<td>15</td>
<td>32</td>
<td>12</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td><strong>Assault/Homicide</strong></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>8</td>
<td>5</td>
<td>17</td>
<td>7</td>
</tr>
<tr>
<td><strong>Self-harm/ Suicide</strong></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Legal Interventions</strong></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Undetermined</strong></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<tr>
<td><strong>Unknown/Unspecified</strong></td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>--</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>13</td>
<td>15</td>
<td>8</td>
<td>16</td>
<td>34</td>
<td>15</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

Number of injuries by age group, sex and intent.
Discussion

- Generic and flexible electronic questionnaire
- No system change is required to incorporate new data elements
- Can handle single and multiple answers at any level
- Data validation is done at every possible stage
- Can operate with minimum internet facilities
- Improved data recovery options
- Flexible report generation facility
Issues Identified

- Lack of guidelines for government institutions
- Not having unique Bed Head Ticket (BHT) number or unique patient identification number i.e. Health Identification Number (HIN)
- Sustainability
- Need of dedicated staff (Medical officers/Nurses)
- Supervision
- ICD 10 knowledge
- Not having a trauma registry
Recommendations

- Scale up the NISSSL to the next level
- Ministry of Health to issue a circular introducing injury surveillance activities to the current health care system
- Re-structuring/establishment of injury surveillance units
- Job description of relevant employees and release them from their routine duties
- Capacity building
Recommendation contd...

- Training on ICD-10 coding for medical officers in the curative sector
- Establishment of trauma registry
- Guidelines on unique method to issue BHT Number for all hospitals in SL
- Introduction of unique personal identification number other than National Identity Card number to health care system. This can be Health Identification Number (HIN).
Achievements

- Presented the findings at national level
- MoH agreed to take over implementation
- Funds for the next step will be provided
- Expert committee appointed to supervise injury surveillance activities
Thank You