The Bi-regional Workshop on Injury Surveillance

A Report

Chiang Mai, Thailand, 18 – 21 December 2006
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1. Introduction

A bi-regional workshop on injury surveillance was held in Chiang Mai, Thailand from 18-21 December 2006. It was attended by 71 participants from 19 countries in the Asia Pacific Region, representing government and nongovernmental organizations, ministries of Health, national institutes/research centres, colleges and schools of medicine, UNICEF, WHO Collaborating Centres and AmeriCares (Humanitarian Life line to the World). Please see list of participants and partners in Annex-1.

2. Objectives and expected outcome

2.1 Objectives

General objective: To facilitate national capacity in developing injury surveillance in Member countries.

Specific objectives:

(1) To review the situation of injury surveillance in countries of the Asia Pacific through country presentations, demonstration of record forms, software and examples of surveillance reports for action;

(2) To exchange experience, methods, lessons learned and related tools related among the injury surveillance teams (central and local) from each country;

(3) To develop draft national plans of action for injury surveillance in Member countries.

2.2 Expected outcome

(1) Situation of surveillance system in countries of the Asia Pacific updated.

(2) Experiences in establishment, management, data dissemination and utilization of surveillance data shared.

(3) Lessons learned and critical success factors exchanged, in-depth discussion held with experts who have hands-on experience and with other countries who may have similar working environments and obstacles.

(4) Opportunities to see the tools (record form, manuals, software etc.) of other countries provided.

(5) Injury problems and leading causes of death in all ages and among children under 15 years old reviewed.
(6) National action plans for developing injury surveillance (2006 - 2009) of selected countries developed.

(7) SEAR Regional framework for strengthening injury surveillance system (design and management) introduced.

(8) Profile of injury surveillance systems and child injury in Asia Pacific Region compiled.


3. Inauguration

Dr Kumnaun Aungchusak, Director, Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand, welcomed all participants on behalf of H.E. Dr Mongkol Na Songkha, Minister of Public Health. Dr Wipada Kunaviktikul, Dean, Faculty of Nursing, Chiang Mai University and Director of the WHO Collaborating Centre for Nursing and Midwifery Development also welcomed the participants. Dr Than Sein, Director, Noncommunicable Diseases and Mental Health Department, WHO SEARO delivered the inaugural message of Dr Samlee Plianbangchang, Regional Director, WHO South-East Asia Region. For text of inaugural message, please see Annex-2.

4. Review of national injury surveillance systems in countries of the Asia Pacific Region

Eleven countries made presentations on the established injury surveillance system. The following is a summary of presentations in alphabetical order:

1. Australia

Establishment: Data on injury deaths has generated public and political concern about road safety since the 1950’s and is still extremely important for injury surveillance. In 1980, data on injuries from hospital admissions and other sources were used. In 1985, the Better Health Commission report advocated injury surveillance in hospital emergency departments (ED). ED-based injury surveillance flourished for a few years, but due to the high cost of maintaining a special-purpose system capable of providing data with good enough quality to monitor trends, ED-based surveillance continued only in some parts of Australia, specially in the State of Victoria and Queensland (injury-specific data collection at selected hospitals).
At present, injury surveillance uses a variety of data sources, most of which also serve other purposes as well. Australia’s Injury Surveillance consists of multiple systems and complex arrangements.

**Responsibility**: Multi-sectoral

- **Health sector**: Overall injury surveillance.
- **Other sectors**: Specialized surveillance, e.g., Road Traffic Injury and other transport injury, homicide, workers’ injury.

**Federal Structure**:

- **National level** – Australian Institute of Health and Welfare (AIHW) National Injury Surveillance unit and surveillance and research group.
- **State/Territory** – varies, all have some data collection and research on road safety and crime.

2. **Bangladesh**

**Establishment**: In 2005, piloting as community-based household surveys on children only in three districts. Hospital injury registration system was developed in 2007 to collect data from admitted patients.

**Responsibility**: Centre for Injury Prevention and Research, Bangladesh. Police reports and post-mortem reports (data collected from local police station’s record).

3. **Cambodia**

**Establishment**: In 2004, RTI accident and victim information system (RTVIS) was developed. The extension of the RTVIS into a national injury surveillance system has started in 2006 to include other important injuries.


4. **China**

**Establishment**: In 2003-2004, a pilot study on hospital-based injury surveillance system was conducted in 70 hospitals (11 provinces involved). In Aug 2005, the Ministry of Health issued a formal document to establish the national injury surveillance system.
Responsibility: Ministry of Public Health (National Centre for NCD and Injury Control and Prevention (NCNCD, China CDC).

In 2007, population-based injury surveillance will be conducted.

5. Republic of Korea

Establishment: Data on deaths had been used extensively in the country to identify and monitor the problem of injuries. In 2005, a hospital-based injury surveillance system was started with:

(1) Emergency Department (ED) based injury surveillance in 16 hospitals (expanded to 117 hospitals in 2007). The variables were:

- Hospital Information
- Patients’ demographic data and admission information
- Contents and results of emergency care
- Result of final diagnosis
- Target Injury

(2) National Hospital Discharge Survey:

- Collected data on hospitalizations
- National probability sample covering 150 hospitals

In 2006, ED-based injury in-depth surveillance was conducted.

Two national surveys are used for community-based injury data:

- Korean National Health and Nutritional Examination Survey and Korean Youth Behaviour Risk Factor Surveillance (KYBRFS)
- Injury in-depth Surveillance

Responsibility: Division of Chronic Disease Surveillance, MoH.

6. Maldives

Establishment: Death certificates and police reports have been important sources of data for injuries. In 2005, hospital-based injury surveillance was piloted in the largest hospital of Maldives, the Indira Gandhi Memorial Hospital. It is also being conducted in two more regional hospitals.

Responsibility: Administrative Department of Indira Gandhi Memorial Hospital, MoH
7. Mongolia

Establishment: In 2006, injury surveillance data collection was piloted at the National Traumatology and Orthopaedic Research Centre (NTORC). It was extended to the Burn and Scald Centre and to Dankhamn-Uul ainaag the same year.

Responsibility: Department of Public Health, MoH.

8. Myanmar

Establishment: In 2005, a pilot study was conducted at the Yangon General Hospital and in August 2006 a one-month study was conducted in 27 townships of all states and divisions in Myanmar.

Responsibility: Myanmar Injury Prevention and Control Project, MoH.

9. Sri Lanka

Establishment: In 2006, four hospitals were selected for a pilot project on injury surveillance.

Responsibility: Coordination and oversight provided by the Trauma Secretariat of the Ministry of Health. Technical support provided by the Epidemiology Unit and the Health Information Unit.

10. Thailand

Establishment: In 1995, five sentinel hospitals in five regions of the country started data collection for the pilot project. This was expanded gradually and voluntarily to 22 hospitals in 2001 and became the National Injury Surveillance System which includes only severe injury cases. At present there are 29 sentinel hospitals (size between 500 - 1,000 beds), which function as referral centers for respective provinces (out of 76 provinces). Surveillance reports pertaining to the first six months of data collection have been disseminated to various concerned sectors.

Responsibility: Noncommunicable Diseases Section, Bureau of Epidemiology, MoPH.

11. Viet Nam

Establishment: During 2003-2006, 40/64 provinces reported injury data from the community. In 2005, hospital-based injury surveillance was piloted in seven hospitals in Hanoi, Ninh Binh and Ho Chi Minh cities.

Injury indicators in health statistic system: This helped to identify risk factors for prevention and improve quality of trauma care.
Plan for 2007-2010: 100% provinces and cities to have an injury surveillance system by using the existing health surveillance system combined with the relevant ministerial and sector injury reporting system.

**Responsibility:** Ministry of Health

**Nature of injury surveillance in the South-East Asia and Western Pacific Regions**

**Sources of data for injury surveillance are:**

- Death registry
- Hospital data
- National HMIIS system
- Reports from other agencies such as Ministry of Transport, Ministry of Health, the police etc.
- Research
- Community survey

**Status and types of injury surveillance**

The status and types of injury surveillance vary from country to country. A few countries have established nation-wide injury surveillance, some have used a number of hospitals as sentinel hospitals to provide data and some have just started injury surveillance as a pilot project in a few hospitals or localities, while some countries focus on certain types of injuries such as road traffic injury, surveillance of other types of injury is yet to be established.

**Type of surveillance system used:**

1. Hospital-based surveillance
2. Combination of multiple systems from different sectors
3. Community survey.

**Differences between hospital-based surveillance and community survey**

Hospital-based surveillance is:

- Ongoing
- Good for measuring problems
- Could show trend
Community survey:
- Usually one-time, hence could not show trend
- Good for measuring uncovered injuries
- Expensive to maintain

**Key points for success**

1. Government or MoH policy that recognizes injury prevention as an important agenda and injury surveillance as an important component in prevention;
2. Good coordination among all agencies involved in injury or crash prevention such as MoH, Ministry of Transport, the police department etc;
3. Good collaboration between agencies involved in collecting data on injury and death such as hospitals, the police, statistics department etc;
4. Good coordination and organizational support from all levels of data producers and management (hospital/clinics, district, province, national);
5. Dedicated person to sustain surveillance at all levels;
6. A gradual approach in developing the system can make a strong foundation;
7. Simple method;
8. Technical and technology support from the central co-ordinating unit;
9. Both group of health personnel, preventive and creative teams get the benefit;
10. Sharing of findings with data producers and relevant parties; and
11. Quality control, such as field supervision.

**Challenges**

1. Commitment from policy makers;
2. Commitment from all hospitals, departments and staff involved in data collection and management;
3. Resources (amount and continuity of budget, personnel);
4. Extra burden on staff in health care providing units;
5. The private sectors is usually not covered; and
6. Discrepancies of data between different sources.

Note: See more information on injury surveillance in Asia Pacific in “Profile of injury surveillance in Asia Pacific”.

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The Bi-regional Workshop on Injury Surveillance
5. Exchange of experiences on injury surveillance systems

Major inputs from experts

5.1 Design and development of the systems

Global Surveillance overview, guidelines and gaps between reality and global guidelines were presented and discussed.

Participants made a number of useful suggestions on how the Injury Surveillance Guidelines could be improved. These included:

- Adding country examples of how systems were set up, some of the challenges and how these were overcome;
- The pros and cons of national represented versus sentinel systems;
- Other ways of obtaining information such as trauma registries, community surveys, fatal injury systems and how these can be linked;
- A clear box on how surveys can be used to supplement these systems;
- More on classification system such as Abbreviated Injury Scales (AIS) and Injury Severity Scoring (ISS);
- How data can be used to improve systems or prevention efforts (some examples);
- How injury surveillance systems can be linked to current Health Information Systems;
- How data variables should be formatted and examples of software used to capture data; and
- How to evaluate the system in greater depth.

A number of participants indicated that a “package” which provided different options for data collection would be more useful than separate recommendations from WHO.

WHO/HQ will review all the recommendations made during the Regional Meeting of the National Programme Managers on Injury Prevention and Care to be held in September 2007 for discussing the ways forward in injury data collection at WHO. Independent of this, the Guidelines will be updated and republished in PDF format on the web to enable users to check whether their suggestions have been taken up by WHO.
5.2 Working with injury data and IT

The experiences of Thailand in the development of injury surveillance included:

- Data modelling which was simple and easy to manipulate and handle
- Code systems which were standardized and widely accepted or which were developed by competent authorities
- Data entry software which was easy, and which could screen invalid data
- Emphasis on report design to meet the requirement of users
- Software development which is stable, is easy to use, and modify

Key factors for success of implementation of IT system in Health Care

- Involvement of data providers, from the beginning and treating them as equal partners by the central co-ordinator;
- Setting up a good team including key persons from various sectors:
  - Administrator/leader from hospital (data provider)
  - Emergency department personnel
  - Medical record personnel and coders
  - Software developer
  - Support Team
- Strong network of hospitals in the piloting phase – this network has strengthened and facilitated the development and expansion of the system to other hospitals;
- Leadership in central coordinating unit and sentinel sites;
- Software – easy, stable and bug-free, providing the right output to users;
- Local and central support;
- Appropriate training and documents.

In the coming decade, with advancements in adopting ICT to hospital, injury surveillance system should apply technology to:

i. reduce data entry redundancy;
ii. facilitate linkages with other data perspectives, eg: financial, human resource, quality and support to health research;
iii. further support quality of care and hospital accreditation; and
iv. provide on-line reports and data consolidation.
5.3 Integrating trauma registry with injury surveillance

Figure 1: Trauma Care Improvement by Participatory Action Research

Figure 2: Principle for Trauma Care Improvement by Participatory Action Research: Abdullahi
• Trauma Audit is one type of medical audit, to assess the quality of care and to facilitate improvement in trauma care;

• Components of Trauma Audit
  ➢ Trauma registry
  ➢ Medical record
  ➢ Trauma audit recording form
  ➢ Guidelines for recording data and definition
  ➢ Peer group review

• Conceptual Framework
  ➢ Set up a system of medical care quality assessment
  ➢ Auditing system using fatal case peer review as a process
  ➢ Set up audit filter
  ➢ Implementation
  ➢ Evaluation

• The Khon Kaen trauma centre, Thailand, used the trauma registry to collect data on probability of survival of each severely injured patient and use it for trauma auditing (see tables). The same trauma registry also provided information on injury prevention.

<table>
<thead>
<tr>
<th>First Aid Procedure during Transfer</th>
<th>Care</th>
<th>No Care</th>
<th>No. of Patients that Need Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proper</td>
<td>Improper</td>
<td>No</td>
</tr>
<tr>
<td>Airway care</td>
<td>413</td>
<td>54.7</td>
<td>97</td>
</tr>
<tr>
<td>Stop bleeding</td>
<td>773</td>
<td>53.0</td>
<td>456</td>
</tr>
<tr>
<td>Splint/slab</td>
<td>586</td>
<td>43.9</td>
<td>378</td>
</tr>
<tr>
<td>IV fluid</td>
<td>1421</td>
<td>83.1</td>
<td>111</td>
</tr>
</tbody>
</table>

Table 1: Referral Audit: IS-Table 30 (1997) Care during transfer from district hospital
### Table 2: Environment Management System (EMS) Audit: IS-Table 30 (1997) First Aid Care of EMS

<table>
<thead>
<tr>
<th>First Aid Procedure during Transfer</th>
<th>Proper</th>
<th>Improper</th>
<th>No Care</th>
<th>No. of Patients that Need Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Row%</td>
<td>No</td>
<td>Row%</td>
</tr>
<tr>
<td>Airway care</td>
<td>30</td>
<td>11.9</td>
<td>13</td>
<td>5.2</td>
</tr>
<tr>
<td>Stop bleeding</td>
<td>121</td>
<td>12.7</td>
<td>129</td>
<td>13.5</td>
</tr>
<tr>
<td>Splint/slab</td>
<td>59</td>
<td>14.3</td>
<td>32</td>
<td>7.8</td>
</tr>
<tr>
<td>IV fluid</td>
<td>104</td>
<td>26.1</td>
<td>7</td>
<td>1.8</td>
</tr>
</tbody>
</table>

### Table 3: First Aid Care of Volunteer and EMT

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Proper</th>
<th>Improper</th>
<th>No Care</th>
<th>No. of Patients that Need Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>97%</td>
<td>98%</td>
<td>99%</td>
<td>00%</td>
</tr>
<tr>
<td>1. Volunteer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airway care</td>
<td>1.1</td>
<td>0.0</td>
<td>0.9</td>
<td>1.2</td>
</tr>
<tr>
<td>Stop bleeding</td>
<td>4.5</td>
<td>2.5</td>
<td>5.5</td>
<td>13.2</td>
</tr>
<tr>
<td>Splint/slab</td>
<td>3.7</td>
<td>9.5</td>
<td>9.4</td>
<td>27.5</td>
</tr>
<tr>
<td>IV fluid</td>
<td>7.0</td>
<td>5.3</td>
<td>4.9</td>
<td>6.0</td>
</tr>
<tr>
<td>2. EMT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Airway care</td>
<td>30.2</td>
<td>33.3</td>
<td>70.0</td>
<td>68.3</td>
</tr>
<tr>
<td>Stop bleeding</td>
<td>23.3</td>
<td>37.2</td>
<td>45.5</td>
<td>63.9</td>
</tr>
<tr>
<td>Splint/slab</td>
<td>30.8</td>
<td>50.0</td>
<td>67.1</td>
<td>80.4</td>
</tr>
<tr>
<td>IV fluid</td>
<td>37.7</td>
<td>37.2</td>
<td>22.7</td>
<td>22.7</td>
</tr>
</tbody>
</table>

The Bi-regional Workshop on Injury Surveillance
5.4 Administrating and strengthening the injury surveillance (IS) system

- The specified objective(s) of the IS system define all aspects of the data:
  - What data is to be collected
  - From where it will be collected
  - How it will be collected
  - How it will be processed
  - What will be the final outcome and
  - How the ISS may be monitored and evaluated

**Figure 3: Medical and Nursing Audit for the Management of Traumatic Patient 1997-1998**
Possible model of injury surveillance:

- Model A - to have the same system installed in all sectors
  
  **Advantage**
  - Simple to install
  
  **Disadvantages**
  - Cannot satisfy the needs of the several sectors involved
  - Cannot accommodate the complexity of the injury/violence programme

- Model B - each sector maintaining its own information system and contributing specified data to a central violence and injury database in one of three ways

  **Advantage**
  - Each sector responsible for its information system
    - Ownership
    - Increased likelihood of sustainability
  - System will meet sector needs
  - Opportunity to build on or modify an existing system thus reducing costs

Use of combined data source in the existing system was recommended to reduce the need for additional resources and obtain a sense of contribution. However, there would be some problems regarding:

- Consistency in definitions, especially of a case
- Comparability of categories
- Integration of each sector's contribution to Co-ordinated Violence and Injury Surveillance System (CVISS)
- Management of the integrated data

Implementation challenges

- Inadequate connectivity among potential partners
  - Identify partners and involve them early in the process
- Multiplicity of stakeholders and lack of give "give and take"
  - Memorandum of understanding or other similar binding instruments
- Preservation of confidentiality (ethical issue)
  - Strip data of personal identifiers but retain a unique identifier for later linkages
• Strengthening System
  - Assessment of available resources
    - Acquisition of needed resources
    - Training and on-going development of human resources
  - Review of current data system against stakeholder’s data needs
    - Identify gaps and weaknesses
    - Upgrade existing systems if necessary
  - Identify partner focal points with oversight for data collection, analysis and dissemination within the sector
  - Supervision and monitoring
    - Ongoing, executed by the sector focal point (within sector)
    - Advocate to oversee CVISS
  - Sustainability
    - Advocate to champion
  - System evaluation including intra-sectoral and inter-sectoral data audits for quality assurance
• In order to achieve:
  - Engage partners
  - Agree on common objectives, required data elements, their taxonomies and definitions
  - Determine which sectors will be sources for which data components
  - Select model and establish linkages
  - What will be required to hasten the process (forms/screens, processes, training)
  - Decide national body for output and management
  - Advocacy stage

5.5 Application and management in injury surveillance
Injury surveillance is an ongoing information system, hence, to start with, it needs:
✓ Policy at national, state or health ministry level to create demand for epidemiology information

✓ Institutional responsibility

  – To enhance obligation to support human and related resources
  – To ensure continuity of the system
  – To transfer experience in injury/trauma prevention; or experience in handling previous surveillance systems to the new system

✓ Financial support

Injury surveillance has to be systematic and practical. Hence, it should:

✓ Have a document for reference regarding objective(s), definition of terms, data flow, system work process, concerned personnel, data quality control process (supervision and evaluation) etc.

✓ Integrated easily into daily work of data providers

✓ Use ICD-10.


There are two important chapters concerning Injuries:

Chapter XX - "External causes of morbidity and mortality" - the causes.

Chapter XIX - "Injury, poisoning and certain other consequences of external causes".

Use ICD-10, Chapter XX for systematic and standardized classification of environmental events and circumstances as the cause of injury, poisoning and other adverse effects.

Use ICD-10, Chapter XIX for systematic and standardized classification of the result from external causes.

ICD-10 - Chapter XX (The causes of injuries)

✓ Provides several definitions of terms related to external causes of injuries, especially those related to transport crashes, place of occurrence and activities while injured

✓ Use of the relevant code for this chapter would lead to appropriate prevention of injury
Especially in causes of death, the code in this chapter should preferably be used, if only one code is tabulated.

Categorizing the causes of injury
- Three digit coding recommended
- Defining certain terms related to transport crashes, place of occurrence and activities

However, transport accidents have a fixed combination code at the 4th digit which cover the person injured (pedestrian, passengers, drivers) and vehicle types, we recommend an additional system coding design for flexible combination of pedestrian and vehicle types involved.

ICD-10 - Chapter XIX (The nature of injuries)
- four digit coding should be used
- It was accepted by medical record personnel (coders) and public health experts (data users)

- Injury surveillance should be rapid. It should not require too much time for data editing and reporting, while maintaining accuracy and trust of policy makers
- Having a large amount of data on minor injuries like OPD cases at emergency room can hinder timeliness
- Only important events should be under surveillance and accuracy (CDC Surveillance Evaluation Guidelines)
- Injury Surveillance is one among three activities in operational epidemiology
  - Surveillance (what, whom, where and when)
  - Investigation (to confirm cluster of injury, assumption on how and why)
Epidemiological research/studies (to get more evidence on the hypothesis derived from surveillance and investigation and evaluating interventions)

Evidence from middle-and-low-income countries such as Thailand shows that injury surveillance information has led to policy and facilitated related injury prevention actions as follows:

- National policy in pre-hospital service.
- 1995, MOPH - FDA regulations for mandatory warning on alcoholic beverage labels regarding risk of driving after drinking.
- 1996, RTG/WHO and MOH initiated anti-drunk driving campaign with private partners.
- 1996, Helmet law was enforced country-wide.
- 2000, More studies and research on violence, linking social scientists, feminists and public health workers with hospital services were catalyzed.
- 2000, The report on severe injuries and deaths of motorcycle riders, which has constantly contradicted police and Ministry of Transport reports since 1995, began to receive more attention from the government together with the daily report from MoH on the number of RTI deaths from MC crashes during the Thai Traditional Festival made by the
National Road Safety Directing Centre (RSDC) set up by the Prime Minister in 2002.

• 2003, IS information was utilized by the Deputy Prime Minister as Chairman of RSDC in formulating policy on enforcement of wearing of helmet by motorcyclist, drunk driving, driving licence, more breath analysers and speed guns, black-spot reports and research on motorcyclist lane.

• 2003-2004, IS information was intensively used by RSDC to monitor the enforcement monthly and daily, during the New Year festival.

• 2003, IS report on severely injured child from riding on MC, non-helmeted, alcohol - policy on child MC helmets promotion and enforcement including technical support for production of standard child helmet.

• 2004, First lot of 15,000 standardized, low-cost motorcycle child helmets (for 2-3 yrs old) produced by manufacturers through open bidding (3 million Baht from government budget)

• 2004-2005, Child helmet promotion campaign implemented in 15 pilot provinces (US$ 400,000).

• 2005, Policy to strictly enforce a ban on alcohol sale and consumption among those less than 18 years.

• 2005, Health-promoting hospitals for road safety started in injury sentinel surveillance hospitals.

**Good Injury Surveillance should:**

• Clearly define the health events of interest, path of data flow, etc.
• Use appropriate methods for information handling
• Identify cluster and major problem of injuries
• Provide most recent information whenever required
• Rapidly detect important changes
• Use minimal resources (hospital-based sentinel surveillance should be a good option)
• Lead to meaningful and effective actions for monitoring known high-risk behaviours
• Encourage local use of data - supporting software - training, supervising, evaluating sentinel hospitals to interpret and utilize surveillance data
• Have strong networking among sentinel hospitals in the country

**Important points in setting up hospital-based injury surveillance**

• A hospital would normally have the following questions when approached to provide data:
  - How long will it take to collect the data?
  - Who will pay now and in future?
  - Who else can access and make use of the data?
  - Will data providers be credited and how?
  - What is the benefit to the hospital and to patient care from this data system?

• Sentinel hospitals are important partners in injury surveillance and prevention. Capacity strengthening for hospital personnel is essential.

• Sentinel surveillance works.

6. **Development of National Plan on "Injury Surveillance"**

Country group work on the development of a National Action Plan on Injury Surveillance with experts from WHO/HQ, SEAR and WPR were conducted. The plans would be sent back to the regional offices for further follow-up and support.

7. **Exchange of experiences in the local use of surveillance data**

7.1 **Site visit to Lampang Hospital**

Lampang hospital is a regional hospital with 800 and 52 (ICU) beds. The hospital started collecting injury surveillance data in 1995. This hospital is one of the best in terms of quality of injury data (completeness and timeliness) in the country and uses the data for developing and/or improving the referral system, trauma audit, nursing audit and injury prevention.

Exchange of experiences in the use of surveillance data at the local level for injury prevention and a site visit to observe injury surveillance in Lampang Hospital was conducted at:

- Department of Emergency Medicine and Forensic and Emergency Room
- Trauma Care Centre
7.2 Five countries (Australia, Thailand, China, Myanmar & Bangladesh) presented experiences in the use of surveillance data for local action.

Evidence was provided to show that surveillance data/information can be utilized for action at the local level as well as at the national level.

8. Country presentation on National Child Injury Report from surveillance data and related sources

Seven countries (Australia, Bangladesh, India, Myanmar, Republic of Korea, Sri Lanka and Thailand) presented the child (less than 15 years) injury situation from
The Bi-regional Workshop on Injury Surveillance

RTI, drowning, accidental falls and burns were found to be the major problem of severe injuries/deaths in most countries. Motorcycle crashes are important causes for RTI in many countries. Important findings were that if the data were collected from OPD and small hospital cases, "falls" ranked higher due to larger magnitude, but with less severity. The principle, "only important events should be under surveillance", was emphasized and data collection only on severe injury cases (dead, observed in hospitals, admitted) was recommended.

(See more details in "Profile of Child Injury in Asia and Pacific Region")

9. Partnership on strengthening injury surveillance

The Project Manager, Trauma and Emergency Medicine, AmeriCares in Sri Lanka, presented her experiences and the possibility of collaboration and support for injury information and child injuries prevention as follows:

(1) Types of Donors
   - UN agencies
   - Government
   - Nongovernmental (non-profit)
   - Private

(2) Nongovernmental Organizations
   - Can provide funding, gifts in kind, capacity building, project support etc.
   - Not all NGOs are the same, they have different mandates, capacities, processes, funding sources and different aims depending on whether they are international or local

(3) Before partnering with an NGO
   - Establish your objectives and plans
   - Write them down!
   - Think about what you need from a partner
     - Funding?
     - Technical support?
     - Capacity?
(4) What makes a good NGO partner?

- Similar objectives
- Resources to meet your needs
- Experience in field of project work
- Experience in country

(5) Finding Potential Partners

- Look around: -
  - What organizations are working in your city/country?
  - What organizations are working in your subject areas?
- Ask: -
  - Is there an NGO coordination centre?
  - Relevant UN agencies for suggestions.
- Research: -
  - Internet search
  - Local NGO directories

(6) Finding NGO Support for Injury Surveillance

- Prepare your sales pitch: justification of need, potential outcomes, heartfelt stories
- Tie into other topics: Millennium Development Goals, emergency preparedness and pre-hospital care
- Be creative
- Be flexible
- Be persistent

(7) Tips on working with NGOs

- Be clear on project objectives and those of each stakeholder
- Identify roles, responsibilities and expectations of each partner
- Set realistic budgets
- Get a signed agreement between partners
- Establish open lines of communication
- Be honest about successes and challenges
Potential Challenges of working with NGOs

- Lack of authority and influence with local officials
- Objectives of donor don't fit with your objectives
- Influenced by donors
- Lack of adequate understanding of local context
- Changing mandates and commitments

10. Conclusion and Recommendations

10.1 Conclusion

Injury surveillance and information systems work

- Evidence from South-East Asia (SEA) and the Western Pacific (WP) regions reveals that injury surveillance and information systems can raise public awareness, and initiate policy debate and actions on appropriate national and local rules, regulations and programmes on interventions for safety.

- A few countries in the SEA and WP regions have already established injury surveillance systems while others are processing or piloting the same.

- An officially assigned central unit at the national level is needed in the ministries of health to provide technical support and effective and close coordination with data-providing units such as hospitals. Adequate and early involvement of data providers in designing, piloting and evaluating the system, including training, would lead to well-perceived ownership, well-performing local use of information by providers and hence create system sustainability.

- The practical experiences, methods, models and tools in injury surveillance (record forms, manual, software, etc.) are very useful for establishing and improving the system in Member countries. 'Sentinel injury surveillance system, using selected hospital data' works in low-to-middle-income countries.

- Trauma registry is needed by major hospitals in the regions to improve trauma care. Hence, there is a high possibility in the regions to combine and set up "Trauma Registry-cum-Injury Surveillance" in each Member country to achieve both objectives: for acute care quality monitoring and improvement; and for injury prevention.
• Injuries to children less than 15 years are also an important public health problem. Important causes of this in the Asia Pacific region are road traffic injuries, drowning, accidental falls and burns.

• Collaboration between WHO and other UN agencies or NGOs for the establishment and maintenance of Injury Surveillance system has become an important issue to explore for the appropriate role(s) of each agency.

10.2 Recommendations

10.2. (i) Member countries

(1) Member countries with established injury surveillance systems or any other appropriate information systems on injuries should strengthen and sustain their systems to make effective use of information for policy, regulation and national programmes in injury prevention.

(2) Low and middle income (LMI) countries that have not yet established a "national injury surveillance system" should adopt the necessary step-by-step development approaches for collection, analysis and dissemination of evidence-based information on injuries for policy and programmes. WHO and other partners, and the high income and LMI countries who have vast experience and expertise, should share their knowledge and financial resources.

(3) Member countries should organize wider consultation and engagement of the stakeholders (government agencies, the private sector, civil society groups, national and international NGOs, networks and alliances, and communities), for further development and coordination of policies and programmes for strengthening injury information systems within the framework of comprehensive national injury prevention and control.

(4) Member countries should allocate adequate financial and technical resources to support and sustain national injury surveillance and information to identify and monitor injury problems among the population and specific age groups, especially in children; for appropriate prevention and control.

10.2. (ii) WHO

(1) WHO should continue to advocate for renewed and sustained political commitment at the highest administrative levels in Member countries to establish and strengthen the injury information system, as part of national injury prevention and control, through appropriate support.
(2) WHO should facilitate and enhance partnerships, networks and alliances for harnessing additional technical and financial resources for injury prevention and control, including injury surveillance, among international development partners and UN agencies.

(3) WHO should support the establishment and functioning of knowledge networks, data warehouse and information clearing houses related to injury surveillance, such as WHO collaborating centres, and national and regional centres of excellence and networks, in order to have technical forums and dialogues on national, regional and global injury-related issues.

(4) WHO should support Member countries in establishing a critical mass of health and non-health professionals, through various forms of expertise and skill training, and also through developing programmes, policies, plans of action, guidelines and documentation of evidence related to injury surveillance, in collaboration with other international and intergovernmental agencies, NGOs, and institutional networks.

(5) WHO should promote the quality use of ICD 10 and related health information systems to facilitate appropriate categorization, prioritization and monitoring of injury problems.

(6) WHO should support further collaboration in developing guidelines for sentinel injury surveillance between the South-East Asia and Western Pacific regions with the involvement of systems and tools from both regions.
## Annex 1

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Annex 2

Text of inaugural message by
Dr Samlee Plianbangchang, Regional Director,
WHO South-East Asia Region

"Injury has emerged as a major public health problem worldwide in recent years. Every day, around the world, almost 16,000 people die from all types of injuries. This represents about 10% of the deaths due to all causes. WHO estimates that the burden would double in a few decades if appropriate action is not undertaken. As per the World Health Report 2004, around 50% of deaths due to injury occurred in countries of both the South-East Asia and the Western Pacific Regions, which together, have more than a third of the world's population. Injury usually ranks among the top five causes of morbidity and mortality, in all countries of the Regions, even in island nations. Injury may be due to unintentional causes like road traffic, accidents, poisoning, drowning, falls or burns from fires, or intentional, self-inflicted causes, violence or war. More than 95% of all deaths due to injuries are unintentional. In the low and middle-income countries, road traffic injuries are the main causes of death among the 34% of all deaths due to injuries. They are the second-leading cause of death among 5-14 year-old children and young adults aged 15-29 years, worldwide.

The rapidly rising number of motor vehicles and motorcycles in the world and especially in countries of both Regions has resulted in an equally rapid increase in the number of injuries and deaths. While in developed countries, the victims of road traffic injuries are the occupants of motorized vehicles, the majority of road traffic deaths are among pedestrians, passengers, cyclists, users of motorized two-wheelers, and occupants of buses and trucks.

As early as 1966, the World Health Organization declared injury as a public health problem. Several resolutions on the prevention and control of injury and related issues have been adopted by the World Health Assembly, the latest being resolution WHA57.10 on Road Safety and Health adopted in 2004.

The WHO Regional Committee for South-East Asia also debated the subject of injury and adopted a resolution in 1994, with particular emphasis on accident prevention and trauma care management. Countries of the South-East Asia Region had developed a strategic plan for injury prevention and control in April 2002. The plan was aimed at promoting policy advocacy and legislation, strengthening surveillance and pre-hospital care, establishing national institutions for policy, research and development for injury prevention and networking.
Some countries have made good progress in developing and implementing national programmes to prevent and control injuries. Some have not yet put injury prevention on the public health agenda. This may be because injury is an area that is considered to be the responsibility of sectors other than health such as the police, transport, education and legal authorities. In some countries, injury control was initiated with the improvement in medical care services, such as the establishment of accident and trauma centres in selected places, strengthening ambulance services, and promoting training on injury care and management. While it is essential to provide necessary care for the injured, it is equally important to implement primary preventive measures to reduce the number of injury cases.

In June 2006, health secretaries of countries of the South-East Asia Region reviewed and adopted the Regional Framework for Prevention and Control of Noncommunicable Diseases. The framework called for estimating population-based issues of NCD, identifying evidence-based, cost-effective interventions, developing appropriate implementation plans (STEP approach), monitoring and evaluation.

Within that framework, the first step of a public health approach to injury prevention and control is to have appropriate information in order to ascertain the magnitude and characteristics of injuries and their basic causes. The process of collection, analysis and reporting of injuries - in short, "Injury Surveillance", is the best tool to enable policy-makers to understand the extent of the problem, and how, when and where, people are affected, who would handle them effectively as well as what would be the outcome of the management of injuries. This would lead to informed decisions on how to plan and monitor injury prevention and control in a timely and continuous way. The information could also serve as a major source of media messages for wider dissemination to the public and other sectors, which, in turn, would greatly support public health education.

WHO and the Centres for Disease Control, Atlanta, USA developed "Injury Surveillance Guidelines" in 2001, which were aimed at programme managers and health researchers and discussed how to develop information systems for the systematic collection and analysis of data on injuries.

Since infrastructures such as the road transport system in each country differ, the injury surveillance system should be adapted to suit the specific national situation. The main purpose of this workshop, therefore, is to identify how to develop and strengthen individual injury surveillance systems, so that they can produce adequate and timely information for injury prevention and control activities.

The development and management of injury surveillance requires a range of different health professionals, notably orthopaedic surgeons, general practitioners, epidemiologists, public health managers, nurses, statisticians, medical record technicians and local administrators. There is a need to strengthen their collaboration.
with other sectors, such as the police and construction engineers. The variety of disciplines attending this workshop clearly reflects this multidisciplinary principle in establishing and maintaining an injury surveillance system. Each profession has a unique strength and critical role to ensure that the system works, and thereby reduce the unacceptable number of deaths from injury in our populations.

During this workshop, participants will have a hands-on opportunity to identify the institutional responsibility and support needed to sustain the system, and to strengthen networking to help expand and vitalize it. I am particularly pleased that child injuries are on the agenda, since the data clearly point to an escalating problem in our regions."
### Annex 3

**Tentative Programme**

**Monday, 18 December 2006**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:30 - 09:00</td>
<td>Registration</td>
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<tr>
<td>09:00 - 09:30</td>
<td><strong>Agenda Item 1</strong> - Inauguration</td>
</tr>
<tr>
<td>09:30 - 10:00</td>
<td>Tea/Coffee break</td>
</tr>
<tr>
<td>10:00 - 12:30</td>
<td><strong>Agenda Item 2</strong> - Review of National Injury Surveillance Systems in SEAR and WPR countries</td>
</tr>
<tr>
<td></td>
<td>a) Country presentation on injury surveillance establishment and maintenance - 15 minutes including questions/answers</td>
</tr>
<tr>
<td></td>
<td>1. Australia (By Temporary Adviser Dr James Harrison)</td>
</tr>
<tr>
<td></td>
<td>2. Thailand (By Dr. Kamnuan Ungchusak)</td>
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<tr>
<td></td>
<td>3. China (BY Dr. Jiang Yong)</td>
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<td></td>
<td>4. Myanmar (By Temporary Adviser Prof Kyaw Myint Naing)</td>
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<td></td>
<td>5. Bangladesh (By Temporary Adviser Dr Fazlur Rahman)</td>
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<td></td>
<td>6. Sri Lanka (By Dr. Eeshara Vitnana / Dr. Anil Jasinghe)</td>
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<td>7. Vietnam (By Dr. Luong Mai Anh)</td>
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<td>8. Cambodia (By Dr. Prak Piseth Raingsey)</td>
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<td></td>
<td>9. Republic of Korea (By Ms. Lee-Bo-Eun)</td>
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<td></td>
<td>Moderator: Dr. Than Sein</td>
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<td></td>
<td>Day 1: Rapporteur: Dr. Muhammad Fadhil Bin Mohd (From Malaysia)</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch</td>
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<td>13:30 - 14:00</td>
<td>Group Photo</td>
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<tr>
<td>14:00 - 14:30</td>
<td>b) Exhibition of tools, record forms, manuals, software, data flow and reports - briefing for setting up exhibition - RA-DPR/SEARO</td>
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<td></td>
<td>Moderator: RA-DPR/SEARO &amp; RA-HSE/WPRO</td>
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<tr>
<td>14:30 - 15:00</td>
<td>Exhibition set up by each country</td>
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</table>
15:00 - 17:30 | Walk around by participants and Evaluation by panel: Exhibition walk

<table>
<thead>
<tr>
<th>Exhibition walk from 15.00 to 17.00 hrs</th>
<th>Your Exhibition is displayed (Please stand next to your poster on time as below)</th>
</tr>
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<tbody>
<tr>
<td>Poster number</td>
<td>Country</td>
</tr>
<tr>
<td>1</td>
<td>Australia</td>
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<td>2</td>
<td>Bangladesh</td>
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<td>3</td>
<td>Cambodia</td>
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<td>China</td>
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<td>Myanmar</td>
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<td>8</td>
<td>Thailand</td>
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<td>9</td>
<td>Vietnam</td>
</tr>
</tbody>
</table>

Tuesday, 19 December 2006

08:30- 09:00 | Announcement of best exhibition

**Agenda Item 3** - Exchange of experiences in Injury Surveillance System

**Moderator for morning session: Dr Dorji Phub (From Bhutan)**

**Day 2: Rapporteur: Dr Fraklin Diza (From Philippines)**

| 09:00 - 10:00 | a) Design and Management of Injury Surveillance System

| 10:00 - 10:30 | Tea/Coffee break
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Description</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30 - 11:30</td>
<td>a)ii Work with injury data and IT</td>
<td>Data processing, Coding and analysis, coder, data entry, software development and maintenance and data editing (including 30 minutes for discussions)</td>
<td>By Temporary Adviser : Dr Choosna Makarasara</td>
</tr>
<tr>
<td>11:30 - 12:30</td>
<td>a)iii Integrating trauma registry to injury surveillance</td>
<td>Acute care and quality monitoring, integrated trauma care system, TRISS and trauma audit (including 30 minutes for discussions)</td>
<td>By Temporary Adviser : Dr Witaya Chadbunchachai</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30 - 14:30</td>
<td>a)iv Administrating and strengthening injury surveillance system</td>
<td>Use of combined data sources, data linkages for multisectoral use, ethical issue in surveillance, attributes of surveillance system and strengthening process: supervision, evaluation and others (including 30 minutes for discussions)</td>
<td>By Temporary Adviser : Mrs Yvette Holder</td>
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<td></td>
<td>Moderator for afternoon session: Dr. Vineet Chawdhry (From India)</td>
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<tr>
<td>14:30 - 15:00</td>
<td>Tea/Coffee break</td>
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<tr>
<td>15:00 - 16:00</td>
<td>a)v Application and management in injury surveillance for action</td>
<td>Organization Support for injury surveillance, Revisiting ICD 10 for injury surveillance: surveillance data to action (surveillance report, investigation, research, networking, advocacy and media) (including 30 minutes for discussions)</td>
<td>By Dr Chamaiparn Santikarn: RA-DPR/WHO/SEARO</td>
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<td>Agenda Item 4 - Development of National plan on developing &quot;Injury Surveillance&quot;</td>
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<tr>
<td>16:00 - 17:30</td>
<td>Country Group Work with the experts</td>
<td>Country delegates to discuss the national action plan for injury surveillance development with the experts. (to be continued after the break)</td>
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<tr>
<td>17:30 - 19:30</td>
<td>Break</td>
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19:30 - 21:30  • (Contd.) Country Group Work with the experts  
Country delegates to discuss the national action plan for injury surveillance development with the experts.

**Wednesday, 20 December 2006**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:00</td>
<td>Departure from Hotel for Lampang Hospital (3 buses)</td>
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<tr>
<td>09:30</td>
<td>Arrival at Lampang Hospital</td>
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<tr>
<td>09:30 - 10:00</td>
<td>Welcome and Tea/Coffee break</td>
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<tr>
<td>10:00 - 12:30</td>
<td>Country presentations on local use of surveillance data for actions and impact - 15 minutes each including questions and answers</td>
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<tr>
<td></td>
<td>1. Australia (By Temporary Adviser : Dr James Harrison)</td>
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<tr>
<td></td>
<td>2. Thailand (By Temporary Adviser : Dr Somkiat Lalitwongsa)</td>
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<td></td>
<td>3. China (By Dr Cheng Jianpeng)</td>
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<tr>
<td></td>
<td>4. Myanmar (By Temporary Adviser, Prof Kyaw Myint Naing)</td>
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<tr>
<td></td>
<td>5. Bangladesh (By Temporary Adviser, Dr AKM Fazlur Rahman)</td>
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<tr>
<td>12:30 - 13:30</td>
<td>Lunch</td>
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<tr>
<td>13:30 - 16:00</td>
<td>Visit to the worksite for Hospital Injury Surveillance System ER, pre-hospital EMS, OR + ICU, medical record section, trauma ward (Divided into 5 groups and rotate to all sites)</td>
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<tr>
<td>16:00 - 17:30</td>
<td>Departure from Lampang Hospital to Chiang Mai</td>
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<tr>
<td>17:30 - 22:00</td>
<td>Social event</td>
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<td>Time</td>
<td>Event</td>
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<tr>
<td>09:00 - 10:30</td>
<td>Country presentation (on national child injury report from surveillance data and related sources) - 15 minutes including questions</td>
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<tr>
<td></td>
<td>1. Australia (By Temporary Adviser Dr James Harrison)</td>
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<tr>
<td></td>
<td>2. Thailand (By Temporary Adviser Ms Siriwan Santijiarakul)</td>
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<td></td>
<td>3. Myanmar (By Temporary Adviser Prof Kyaw Myint Naing)</td>
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<td>4. Bangladesh (By Temporary Adviser Dr Fazlur Rahman)</td>
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<td></td>
<td>5. Sri Lanka (By Ms Carina Tremblay)</td>
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<tr>
<td></td>
<td>6. Republic of Korea (By Dr Hyesook Park)</td>
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<td>7. India (By Dr I.C. Premsagar)</td>
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<td>(to be continued after the break)</td>
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<tr>
<td>10:30 - 11:00</td>
<td>Tea/Coffee break</td>
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<tr>
<td>11:30 - 12:30</td>
<td>(Contd.) Country presentation (on national child injury report from surveillance data and related sources)</td>
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<td>12:30 - 13:30</td>
<td>Lunch</td>
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**Agenda Item 6 - Partnership on strengthening injury surveillance**
<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
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</table>
| 13:30 - 14:30| Panel for general discussion on collaboration and support for injury information system and child injuries prevention by partners (UNICEF, ADB, JICA, Handicap International, TASC, AmeriCares, etc.)
                          
                          **Moderator: Dr Hisashi Ogawa (RA-HSE/WPRO)**
                          (to be continued after the break) |
| 14:30 - 15:00| Tea/Coffee break                                                                                                                                 |
| 15:00 - 16:30| (Contd.) Panel for general discussion on collaboration and support for injury information system and child injuries prevention by partners (UNICEF, ADB, JICA, Handicap International, TASC, AmeriCares, etc.)
                          
                          **Moderator: Dr Hisashi Ogawa (RA-HSE/WPRO)** |
|              | **Agenda Item 7 - Conclusion**                                                                                                                   |
| 16:30 - 17:10| Summary of Asia-Pacific situation in injury surveillance, child injuries and future collaboration                                                    |
                          
                          • Dr Than Sein (Director, NMH/SEARO)                                                                                                           |
| 17:30        | **Agenda Item 8 - Closure**                                                                                                                     |