Recommendations for an Injury Surveillance System in Malaysia: Purpose, Methodology, Needs, Gaps, Recommendations

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1 Purpose

Need assessment for an Injury Surveillance System in Malaysia similar to the European Injury Date Base (appendix 2).

2 Summary (appendix 1)

Cost effective prevention measures require targeting of high risk groups and high risk factors. Malaysia currently has a data gap, particularly for data needed to identify the health burden of injuries caused by violence in terms of risk groups, context and social risk factors. Moreover, there is no systematic reporting on child injuries. Therefore, part of injury surveillance should be the systematic epidemiological analysis and reporting of routine data. A good model is the latest European summary on injuries\textsuperscript{1}.

The IDB could fill the data gap in Malaysia, because it consists of a comprehensive data base of all injuries including road traffic injuries, self harm and violence. The IDB delivers specific information on the injury pattern, context and objects or substances involved.

The key to success in Malaysia is a sustainable implementation tailored to stakeholders’ resources, through:

- minimized workload for hospitals,
- IT which makes administration quick and simple,
- feedback for participating hospitals,
- incentive by the government: certificate with which hospital can advertise.

3  Data sources

The report is based on four main sources:

First, visits were made to parts of the Malaysian health care system in Kuala Lumpur (KL) to gather information on how the health care system works in the field of injury treatment and on how the recording of cases is carried out. The following institutions were visited: a state government hospital (Hospital of Kuala Lumpur), the University Malaya Medical Center, a private hospital (Pantai Medical Centre) and a health care clinic (Tanglin Health Clinic). Visits to the health care system in a rural area were not part of the official program due to time constraints.

Second, meetings were held with officials of the Ministry of Health:

a) with the Information and Documentation System Unit chaired by Deputy Director Dr HJ. Lailanor BHJ. Ibrahim

b) the Department of Information Technology and Communication chaired by Dr Zainudin Bin Abdul Wahab

Third, two meetings were held with “injury related providers” and “decision makers” on national as well as federal state level chaired by the Ministry of Health, Disease Control Division (Dr Zainudin Bin Abdul Wahab). The two objectives of the meetings were to identify whether Malaysia could benefit from an Injury Surveillance System among children and young people and whether it could be implemented in practice. A final meeting discussed and appraised the consultancy’s findings and recommendations chaired by Deputy Secretary-General Dato’ Hasan bin Abdul Rahman (appendix 1).

Fourth, the report is based on health reports and data provided in Kuala Lumpur.

4  Methodology

The assessment is based on:

a) Information gathered during visits to the health care system with focus on: the principle causes of child injuries treated in the facility, the proportion of child injuries in relation to children’s diseases (available figures or only based on estimations), the documentation system (e.g. computerized or not, type of data reported to official statistics) and whether an injury surveillance system is needed in the opinion of health professionals.

b) Issues of meetings and discussions.

c) Analysis of the official Malaysian health statistics with regard to specific data on injury patterns and with regard to usefulness for targeted injury prevention (appendix 3).

d) Analysis of Malaysian health reports with emphasis on injuries in children and young adults (appendix 3, 4).

e) Analysis of medical records on injury cases in state and private hospitals as well as health care clinics to evaluate resources for IDB implementation.

5  Data needs and reporting needs on child injuries

The following are the needs related to child injuries listed according to priority in Malaysia:

- Analysis of the burden of non fatal injuries. This requires a comprehensive database for defining risk groups and risk factors for targeted injury prevention.

- Assessment of the burden of injuries caused by violence (e.g. shaking baby syndrome, assault, sexual abuse, youth violence).
Recommendations for an Injury Surveillance System in Malaysia

- Epidemiological analysis of injuries caused by violence to identify risk groups and risk factors related to context and social history.
- Age specific injury data to assess the distribution of unintentional injuries (e.g. road traffic accidents) and intentional injuries (assault, sexual abuse, self-harm) in the most relevant age groups (infants: < 1 y, toddlers: 1-4 y, school children: 5-14 y, young people 15-19 y).
- Assessment of home injuries (injuries caused by violence might appear as domestic accidents such as falls, scalds, etc.).
- Child mortality review at state level for children (e.g. under 5 years) by paediatricians to determine what could be prevented.
- Assessment of self-harm among young girls (suicide attempt, self mutilation).
- More information on the extent of disability caused by injuries.
- Assessment of the financial burden of child injuries related to health care costs as well as social costs.

6 Gaps: Data limitations (appendix 1)

6.1 Fatal injuries/Mortality data

The cause of death statistic is included in the Malaysian 'Vital Statistics'. The cause of death statistic represents a major element of public health data on child injuries because deaths by fatal injuries are described according to ICD 10 and according to causes (E codes see chapter XX external causes of injuries).

In Malaysia death reports in central areas are filled in on the one hand by medical professionals (around 45 %) and on the other hand by police (around 55 %, mostly deaths in road traffic accidents, drowning and deaths caused by violence). In remote areas like Sarawak and Sabah, head men or teachers are, additionally, authorized to certify deaths. This results in two problems:
- First, data quality from reports filled in by police, teachers or head men is low. Second, HMIS is missing the data not filled in by doctors (55 %).

Conclusion
- If possible, doctors should fill in death certificates to ensure maximum data quality.
- If doctors are not be available in remote areas, death certificate filled in by police, teachers or head men should be included in the HMIS even though this compromises data quality.

6.2 Non fatal injuries/ Morbidity data

Fatal injuries are only the tip of the iceberg. The following chapter gives an overview of the four available data sources on child injuries:
- Within HMIS, the hospital discharge register.
  a) Within HMIS, the hospital discharge register. The hospital discharge register, a subsystem of (HMIS), consists of a computerized monthly and annual reporting system. It timely collects data on diseases and injuries from all discharged patients of Malaysian hospitals (private hospitals included since 2005) and has been extended to ICD 10\(^2\) since 1999. The hospital discharge register includes injury diagnoses (chapter XIX of what) as well as E codes of injury causes (chapter XX). According to ICD 10, the coding of ‘place of injury’ could also be part of

\(^2\) ICD: International Statistical Classification of Diseases and Related Health Problems
Recommendations for an Injury Surveillance System in Malaysia

the data collected, but is mostly not available because it is not filled in. However, the data:

- excludes ambulatory patients in government facilities,
- does not cover the true extent of child maltreatment, because child maltreatment may be hidden behind other diagnoses, such as fractures, scalds, bruises or brain injuries (e.g. shaken impact syndrome),
- does not include the injury mechanism and product involved (e.g. the injury underlying or causing object/substance)

b) The National Trauma Database (NTRD). The National Trauma Database (NTRD) collects comprehensive data on the injury pattern: e.g. mechanism, place and cause of injury as well as the intent of an injury, such as child maltreatment, child neglect or injury by self harm. However, data only encompasses Traumatic Brain Injuries (appendix 5.1-2).

c) Statistics on road accidents by the Royal Malaysia Police. The road traffic accident register is a detailed data collection on road traffic crashes based on the ‘Police Report’. However, it excludes data on medical diagnoses and does not record protection measures used (e.g. safety belt, helmet, etc.).

d) Reports on violence by the Royal Malaysia Police. Police reports on violence comprise notified cases. Therefore, the data does not reflect the true extent of violence against children and young people. Furthermore, self-inflicted injuries are frequently not reported. Nationwide no data exists on youth violence.

Conclusion

- An epidemiological analysis of road traffic accidents among children and young people according to age groups and the mode of transport should be introduced in HMIS.
- ICD 10 is the basic classification in health care, but does not provide enough detail for injury prevention.
- Data on the injury pattern is missing in all data registers.
- The true extent of child maltreatment can neither be depicted from the HMIS, nor from the police report on violence.

7 Gaps: In reporting (appendix 1)

A population based analysis of fatal child injuries in specific age groups (infants: < 1 y, toddlers: 1-4 y, school children: 5-14 y, young people 15-17 y) should be added. Furthermore, the analysis has to differentiate between unintentional and intentional injuries.

The health burden of injuries in children and young people is rarely part of Malaysia’s health reports. In general, the overall number of ‘accidents’ is shown, yet age specific population based figures are not given. There is no differentiation between unintentional and intentional injuries. Mostly, the number of cases is shown, but no population based, epidemiological data, is given\(^3\) (appendix 2, 4). The main Malaysian report, called ‘Malaysia. Achieving the Millennium Development Goals - Success and Challenges’\(^4\) does not cover injuries at all. The latest Malaysian study on injuries was published more than ten years ago (1996). It is not representative and only includes the number of injury cases and not population based figures\(^5\). The internet site

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\(^4\) Published by the United Nations Country Team Malaysia in cooperation with the Economic Planning Unit of the Prime Minister’s Department

\(^5\) See chapter 1.4 ‘Limitations’ of the report on ‘Epidemiology of Injury in Malaysia’
www.myhealth.my is useful for health information and shows issues on diseases, but does not report on child injuries.

8 An additional shortcoming: Investment without implementation

Software for medical reports on violence, MyViss, was developed “to provide the systematic way on handling critical cases like domestic violence, rape, sodomy and child abuse”, but was not implemented. The reason provided for the failure to implement was: “Lack of financial support” (statement Dr Fahdli in the Thursday meeting chaired by Dr Zainudin Bin Abdul Wahab, Disease Control Division, MOH).

9 Why do injury surveillance (appendix 2)

Three reasons support the implementation of a child injury surveillance system:


b) Targeted prevention is cheaper than treatment (Sethi et al 2006)7.


10 IDB fills the information gap (appendix 1)

Malaysian people with serious injuries caused by violence may not report to the police or respond to a survey but they show up in a hospital. In the case of child maltreatment or neglect parents frequently pretend that it is an ‘accident’. Trained doctors in hospitals can identify, whether injuries have been caused intentionally or unintentionally. Hence, an injury surveillance system based on medical diagnoses in hospitals and accident & emergency departments would be more reliable.

The European IDB is a data collection system for all medically treated injuries in hospitals and accident and emergency departments. The IDB consists of a comprehensive data base of unintentional and intentional injuries, including road traffic injuries, self harm and violence, compatible with an international classification according to WHO9.

The IDB delivers specific information on the injury event, context and objects/ substances involved. Furthermore, the medical description of the injury event (so called narrative) gives an in-depth view of where and how the injury occurred. Thus, collected data delivers key information required for injury prevention.

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9 International Classification of External Causes of Injuries - ICECI
The IDB provides population based data to identify risk groups. Additionally, further analyses are possible to investigate the distribution of injury patterns and risk factors in subpopulations with regard to ethnicity, social risks and geographical disadvantage. Because of standardized coding (see European coding manual) IDB provides data for benchmarking between countries and between hospitals worldwide.

11 Recommendations on the implementation process

11.1 Definition of the target
According to the WHO Injury Surveillance Guidelines, before implementation the definition of objectives should be clarified (appendix 6). With regard to the expressed ‘needs’, a Malaysian target of injury surveillance could be: collection of representative data on all types of injuries (intentional and unintentional) in children under 18 years at hospitals.

11.2 Sample size of hospitals
In contrast to the hospital discharge register the IDB only needs a representative sample size of hospitals. The selection of hospitals to achieve a representative sample of the population should be decided upon in Malaysia e.g. in cooperation with the Institute of Health Management.

11.3 Relevant stakeholders
The IDB should be implemented in central hospitals (e.g. state government hospital) to be representative of a population catchment area. These hospitals should also offer most medical disciplines relevant for injuries: e.g. a paediatric ward, child psychiatry, surgery, ophthalmology, ear-nose-throat, etc. Central hospitals with various medical disciplines ensure that representative samples of all types of injuries can be drawn. Furthermore, I recommend to use engaged and motivated hospitals with their SCAN-Teams to get good data quality.

It is particularly important that the catchment area of the hospital is defined to gather population based data. It has to be investigated whether there are overlapping zones between various facilities (e.g. state government hospital, private hospital, district hospital and health care clinics). Therefore, the public health sector, too, must be an integral part of the surveillance system.

11.4 How the IDB can be implemented
First investigate the work process and personnel resource and then decide, together with the stakeholders, what kind of methodology you want to apply: e.g. filling of computerized IDB by doctor or nurse. In Germany, the best solution was for nurses of the accident and emergency department to provide parents and young people with a short questionnaire on the injury event (related to IDB Coding Manual). This saves time for the doctor. After medical examination and treatment a case record in IDB electronic form is filled in by a doctor or study nurse. Monthly, the data can then be transferred via email to the Public Health Institute of Brandenburg (appendix 6).

11.5 What is reasonable for a reliable data generation
...if medical doctors are responsible for the injury diagnosis,
...if there is a data quality check,
...if there is a link to the hospital discharge register.

8th of August 2007
11.6 How to save resources (appendix 6)
The German experience shows that reduction in the quantity of cases monitored is crucial to reduce work load for personnel (appendix 4). In Germany, collection of data is done once per week. There is a link between the hospital’s IT system and the IDB to identify injury cases. Estimation of incidence rates is based on the hospital discharge register and ensures that population based rates can be calculated.

11.7 How to create a sustainable system
It is important to build the injury surveillance system on existing resources. Data analysis and feedback of data to stakeholders are crucial for motivating personnel who are involved in data collection. The government could certify hospitals which provide good data.
Recommendations for an Injury Surveillance System in Malaysia

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8th of August 2007


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Appendix 1

Injury Surveillance System in Malaysia: Needs, Gaps, Recommendations

Dr Gabriele Ellsaeßer
Lecture 13th of July 2007
Injury Surveillance System in Malaysia: Needs, Gaps, Recommendations

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Institute of Health Management & UNICEF Centre for Health Policy Appraisal and Enhancement, lecture, 13th of July 2007

Steps in an injury surveillance system

- Defining data needs
- Assess available resources
- Train staff and activate system
- Data collection
- Evaluating the surveillance system
- Processing the data
- Reporting the results
- Interpreting the data
- Using the results to plan prevention/treatment
- Evaluating the surveillance system

Stakeholders
- Health departments
- International policy
- Other public sector agencies
- Private sector & NGOs


Structure

- Needs
- Gaps
- Recommendations - why and how to close the gap?
- Recommendations - implementation
- Summary of benefits

Needs 1/2

Surveillance of intentional injuries
- Interpersonal violence (shaking baby syndrome, assault, sexual abuse, youth violence)
- Self-harm (suicide attempt, self mutilation)

- "We need the data for targeted prevention and more support of our work"
- "Abuse is the most frequent cause of injured children besides falls (HKL pediatric unit)"

Needs 2/2

- Social risk factors
- Comprehensive database for defining risk groups and risk factor
- Home injuries
- Child mortality review at state level for children e.g. under 5 years by paediatricians

- "We have information gaps on injuries among children particularly with regard to social risk factors"
- "We have various statistics including injuries but they are not compiled"

Structure

- Needs
- Gaps
- Recommendations - why and how to close the gap?
- Recommendations - implementation
- Summary of benefits
Gaps: Data limitations

- Information on injury mortality patterns via causes (ICD)
- Major element of public health
- Data quality dependent on accurately filled death certificates
- Lethal injuries only tip of iceberg
- E.g. data base for admitted and discharged patients via diagnosis and causes
- Not: place of occurrence, injury mechanism, product involved
- Underreporting of injuries by violence and self-inflicted injuries

Cause of death data

HMIS

Gaps: In reporting

- Numbers are counted
- No epidemiological analysis (rates)
- Latest data from 2002
- No injury data available on the website (see CDC)

Gaps: Investment without implementation

* A Malaysia Surveillance System (MyViss) (Software for medical reports on violence) was developed, to provide the systematic way on handling critical cases like domestic violence, rape, sodomy and child abuse, but was not implemented

Reason: “Lack of financial support”
Why to close the gap?
Why do injury surveillance?

- Targeted prevention is cheaper than treatment
- Targeted prevention requires specific information about patterns of injuries, circumstances and causes
- Injuries are preventable to a large extent

IDB fills the information gap

- Malaysian people with serious injuries inflicted by violence may not report to the police or respond to a survey but they show up in a hospital
- Provide data for the analysis of injury patterns
- Provide data for the analysis of injury patterns
- Provide data for benchmarking between countries
- Produce comparable data for all injuries, including road safety, self-harm injuries and violence, compatible with an international classification (WHO IECII)

Recommendations on the implementation process

- Where?
- How?
- What's reasonable for reliable data generation?
- How to save resources?
- How to create a sustainable system?
Recommendations on the implementation process

- How?
  ...be flexible, research your resources and decide then, together with the stakeholder, what kind of methodology you want to apply (see German example)

Recommendations on the implementation process

- What’s reasonable for a reliable data generation?
  ...
  ...if medical doctors are responsible for the injury diagnosis
  ...if there is an accurately filled up IDB
  ...if there is a quality data check
  ...if there is a link to the hospital admission/discharged register

Recommendations on the implementation process

- How to save resources?
  - Reduction in quantity of cases monitored to reduce work load for personnel
  - Collection of data once per week
  - Connection of hospital IT system with IDB to identify injury cases
  - Estimation of incidence rates based on hospital discharge register

Recommendations on the implementation process

- How to create a sustainable system?
  - Built on existing resources
  - Data analysis
  - Feed back of the data analysis to stakeholder
  - Government certificate with which hospitals can advertise

Structure

- Needs
- Gaps
- Recommendations - why and how to close the gap?
- Recommendations - implementation
  - Summary of benefits
Summary: Benefits of IDB in Malaysia

- It is more efficient to prevent than to treat
- Cost effective prevention measures require targeting of high risk groups and high risk factors
- Currently data gap in Malaysia, particularly for data needed to:
  - Identify violence related injuries and their causes
  - Identify social risk factors
- Core to success in Malaysia is a successful and sustainable implementation through:
  - Minimized workload for hospitals
  - IT which makes administration quick and simple
  - Feedback for participating hospitals
  - Incentive by the government: certificate with which hospital can advertise

Our target is to improve children’s health and safety, reducing the gap in inequity.
Appendix 2

European Injury Surveillance System (IDB): Purpose, methodology, results, policy implication and benefits

Dr Gabriele Ellsaeßer
Guest lecture 11th of July 2007
Injuries among children are closely linked to the physical and psychological development of children. The natural curiosity and temptation of children to discover new things may expose them to danger. Therefore the profile of injuries changes according to the age and the different development steps of the children.


Prof. Berfenstam, founder of the Child Injury Prevention Programme in Sweden

Injuries are put into two categories related to intent (WHO)

1: Unintentional injuries (accidents) defined in terms of

- Settings
  - Road traffic accidents
  - Home & leisure accidents
  - Workplace accidents
- Activities
  - Sports
  - Education
  - Play
- Mechanism
  - Falls
  - Burns
  - Drowning

Source: Child and adolescent injury prevention: a global call to action. World Health Organization 2005

2: Intentional injuries

Defined as deliberate acts of violence
- Interpersonal violence (shaking baby syndrom, assault, sexual abuse, youth violence)
- Self-harm (suicide attempt, self mutilation)
- etc.
Global burden of children’s injuries (< 15 years)

- Leading cause of death
- No. 2 drowning
- No. 1 road traffic crashes, No. 2 drowning
- Children in poor families at higher risk

Tragic consequences

- Physical wounds which may last a lifetime
- Emotional wounds in child and family
- Special care that is often needed
- Huge financial burden on parents
- Emotional difficulties for carers

Source: Child and adolescent injury prevention: a global call to action. World Health Organization 2005

Structure

- Purpose of Injury Surveillance
  - Injuries in childhood and adolescents: a global health burden
  - Why do injury surveillance in Europe?
  - Goals of IDB
- Methodology
- Results
- Policy implication
- Benefits

Why do injury surveillance in Europe?

Injury burden

- Number 1 cause of death among children (>1 year) and young adults
- Fatal injuries account for a high proportion of all causes of death
  - For toddlers (1 – 4 y) 27 %
  - For school children (5 – 14 y) 37 %
  - For young adults (15 – 24 y) 66 %
- Leading causes in all Member States: road accidents, drowning, homicide, falls, fire and suicide
- Each Member States has a typical injury profile

Source: Injuries and violence in Europe. Why they matter and what can be done. Summary. WHO Regional Office for Europe, Copenhagen 2005

Injury surveillance is needed

1. To identify specific risk groups and risk factors
   - e.g. Low income and child injuries

Why do injury surveillance in Europe?

Deaths

- Only the tip of the iceberg

Deeper look into the true size of the problem it multiplies exponentially

Injury pyramid of Germany (2005)

- In all countries children of low income families are at higher risk, are less likely to survive and recover from disability (UNICEF, WHO)
- Studies in England and Wales:
  - children of parents from unskilled manual jobs were three to four times more likely to die of an injury than children, whose parents were skilled non-manual workers (Towner)
  - For the lowest occupational group
    - Fire related injuries 16 times higher
    - Pedestrian injuries 5 times higher


Czech Republic: Children's injuries are the top priority in European Union

Innocenti Report Card No2, 2001, Florence

Prevention benefits

- UNICEF: “If the European Union were to achieve the same safety level as its leading member (Sweden), then injury deaths would be reduced by a third.” (Innocenti Report 2001)
- 90% of fatal injuries could be prevented (Chukwudi Onwuachi-Saunders 1999)
- Studies show strong evidence for the effectiveness of prevention:
  - 60% of scalds by lowering the temperature of domestic hot water (Towner et al 2001)
  - 35% of fatal falls by window bars (Klassen 2000)
  - 63%-88% head and brain injuries by bicycle helmets (Towner et al 2001)

Prevention stops or reduces:

- The social-economic burden (€80 to 290 billion annually in health care costs related 16 million non-fatal injuries (WHO Europe 2006)
- The suffering of the individuals involved and their families

But targeted measures require comparable data that is specific to risk groups and risk factors

Data limitations: Information gap

- Information on injury mortality patterns via causes (ICD)
- Major element of public health
- Data quality dependent on accurately filled death certificates
- Not included: fatalities of non-residents like tourists
- Data by diagnosis and average length of stay
- Not on causes of injuries, place of occurrence or injury mechanism

Road traffic accident data
- Comprehensive data for road traffic accidents
- Detailed data on the type of collision partners
- Underreporting of child maltreatment
- Not true extent of violence against children and young people
- No information on youth violence

Police reports on violence
- Only notified cases

Conclusion: Why injury surveillance is needed

- Huge differences in injury risks among European countries and subpopulations demonstrate preventability and gaps in prevention
- Targeted prevention requires specific information about patterns of injuries, circumstances and causes
- Injuries are preventable to a large extent

Structure

- Purpose of Injury Surveillance
  - Injuries in childhood and adolescents: a global health burden
  - Why do injury surveillance in Europe?

Goals of IDB

- Methodology
- Results
- Policy implication
- Benefits
**Goals of the IDB**

Fills the information gap

- Comprehensive data on all injuries for injury prevention
- Provide data for the analysis of injury patterns
- Provide population based data for identifying population most at risk
- Provide data for benchmarking between countries
- Produce comparable data for All Injuries, including road safety, self-harm injuries and violence, compatible with an international classification (WHO ICECI)

**BUT: IDB is about more than just data generation**

It is a process that links together the different institutions involved in injury prevention:

- To ensure that the data most relevant for policy making is available
- To ensure that policies are targeted at high risk groups and high risk factors
- To ensure that the impact and cost effectiveness of policies can be assessed
- To ensure that the different institutions interact in order to achieve continuous improvement

**Structure**

- Purpose of Injury Surveillance
  - Injuries in childhood and adolescents: a global health burden
  - Why do injury surveillance in Europe?
  - Goals of IDB
- Methodology
  - Results
  - Policy implication
  - Benefits

**IDB Methodology**

- Model: U.S. NEISS (UK HASS)
- Nationally representative samples of hospitals (cases of treatment)
- Specific questionnaire (external circumstances)
- Continuous system
- Harmonized methods for sampling, data collection, coding (coding manual), quality control, processing in Member States
- Network of national data administrators as owners of the national data base
- Data access for the public via internet

**IDB participating countries**

Source: IDB Germany, Public Health Institute of Brandenburg, Dr. Ellsäßer

National Data Administrator in Germany:
Institute of Public Health in Brandenburg with 5 participating hospitals

**IDB hospitals in Germany**

- Project leader Brandenburg’s Institute of Public Health
- Responsibility for data quality management
- Data analysis
- Transfer data to European IDB
Steps in the injury surveillance system

- Defining data needs
- Assessing available resources
- Evaluating the surveillance system
- Using the results to plan prevention/treatment
- Reporting the results

Stakeholders:
- Health departments
- International
- Policy
- Other public sector agencies
- Private sector
- NGOs

Defining data needs

- Train staff and activate system

Evaluating the surveillance system

- Processing the data
- Interpreting the data

Using the results to plan prevention/treatment

- Reporting the results
- Private sector & NGOs

Reporting the results

- Stakeholders
- Health departments


Monitoring of injuries

Goal: All injuries, injury prevention

Data Collection

- Data Management

Data Analysis

- Reporting

Trend
- Risk factors

Risk groups
- Geographical distribution

Evaluation of the surveillance system

Stakeholders
- Health departments
- International
- Policy
- Other public sector agencies
- Private sector
- NGOs

Computerized coding

Software developed and tested in the field by the Public Health Institute of Brandenburg

- Good structure
- Easy handling
- Data entry takes 3 to 5 minutes per case

Germany: Specific IDB for children

- Transport Module
- Violence Module
- Admission Module
- Protection measures Module
- Foreign bodies Module
- Social History Module
- Product Module
- Self-harm Module
- Sports Module

Core Data Set

18 characteristics

Result of Injury Surveillance

- Injuries in childhood and adolescents: a global health burden
- Why do injury surveillance in Europe?
- Goals of IDB

Methodology

- Results
- Policy implication
- Benefits

Implemented in a central hospital with 16 clinics (e.g., paediatrics, child psychiatry, ear-nose-throat, ophthalmology, surgery (incl. child surgery), internal medicine and others)
- 1350 beds
- Catchment area around 150,000 people

Source: IDB Germany, Public Health Institute of Brandenburg, Dr. Ellsäßer
Population based data shows:

- Young children and adolescents are most at risk.

Results: e.g. epidemiological analysis: children < 18 years

- Male adolescents are mostly injured by violence (4.8 vs. 1.0/1,000 in girls).
- Injuries by violence mostly occur in the surroundings of the city.

Injuries and age groups (Cottbus City, 2005):

• Most at risk are 15- to 18-year old boys with almost 16% of all injuries.
• Self-inflicted injuries: Primarily occur in 14-to-18-year old girls.

Results: e.g. injuries: by accident vs. violence 2005 (N=573)

- Highest proportion of all injuries
- Highest risk for under 5 years old
- Average proportion in all children around 8%

Results: e.g. specific information on the injury event and risk factors by the doctor's description

1. Boy: Parents shook baby several times, last time 25.08.05. Acute encephalopathy with brain haemorrhages
3. Boy: Patient was shocked when suddenly a group of unknown youths severely beat him up.
4. Boy: The patient was shocked when suddenly a group of unknown youths severely beat him up.

Home injuries mostly occur in infants and toddlers.

School could be a safer place.
Results
e.g. the six most frequent injury mechanisms

- Falls are the most frequent injuries in all age groups
- Thermal injuries and poisoning occur most frequently in infants and toddlers
- Being struck or being kicked by other people most frequently occurs in adolescents during sports

Impact Evaluation

Source: IDB Germany, Public Health Institute of Brandenburg, Dr. Ellsäßer

Results
e.g. product related injuries

- Injuries caused or triggered by products/substances occur mostly in infants and toddlers

Impact Evaluation

Source: IDB Germany, Public Health Institute of Brandenburg, Dr. Ellsäßer

Results
e.g. the most frequent products involved in injuries related to age groups

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants &lt; 1</td>
<td>Furniture, Baby products (crib, carrying cases, baby changing table)</td>
</tr>
<tr>
<td>Toddlers 1 - 4</td>
<td>Hot liquid, Child products (push chair, high chair, cot), Stairs</td>
</tr>
<tr>
<td>School children 5 - 14</td>
<td>Bicycles, Animals (horse, dogs), Playground equipment, Child products (burn bed), Sports equipment</td>
</tr>
<tr>
<td>Young people 15 - 17</td>
<td>Bicycles, Car, Alcohol, Fireworks</td>
</tr>
</tbody>
</table>

Impact Evaluation

Source: IDB Germany, Public Health Institute of Brandenburg, Dr. Ellsäßer

Results
e.g. preventability of home injuries

Preventability of home injuries (n=136)
- 26% by behaviour
- 7% by safety products
- 20% by safety products and behaviour
- 32% unavoidable

Impact Evaluation

Source: IDB Germany, Public Health Institute of Brandenburg, Dr. Ellsäßer

Structure

- Purpose of Injury Surveillance
  - Injuries in childhood and adolescents: a global health burden
  - Why do injury surveillance in Europe?
- Goals of IDB
- Methodology
- Results
- Policy implication
- Benefits

Source: www.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer

- Brandenburg’s IDB data on injuries in children was the catalyst for redefining the goals for the injury prevention network

Source: www.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer
... with currently 32 organisations involved

- Doctors’ Associations
- Public Health Services
- The Midwives’ Association
- The German Green Cross
- Various Accident and Health Insurance Companies
- Emergency Rescue Organisations
- Fire Brigade
- Brandenburg’s Ministries of Transport and Internal Affairs
- Pedestrians’ Organisations
- as well as numerous members of the main political parties

Source: www.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer

New objectives

- No. 1 Enlarging injury monitoring to other hospitals
- No. 2 Providing young children (< 5 y) with a safe home and playing environment
- No. 3 Injury prevention extended to violence prevention: “Parents, don’t shake your babies”

Targeted according to high risk factors and groups identified

Source: www.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer

Measures taken by Brandenburg’s State Government

- Injury prevention has become an integral part of the Brandenburg Government’s Health Programme “Growing Up Healthy in Brandenburg”
- State wide campaign: “Growing Up in a Safe Environment”

Source: www.brandenburg.de, www.masgf.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer

Brandenburgs campaign on child injuries

Based on IDB data

Exhibition: Illustrates typical injury patterns at home and products involved

Toddlers must be held safely

Brochure which illustrates the ten most dangerous risks (IDB) at home and injury measures to be taken

Source: www.brandenburg.de, www.masgf.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer

Based on IDB data

Safety check – advice for parents

Equipment in bad poor condition

Social environment

Check by parents and children

Safety check

Exhibition that illustrates protection measures on the road

Source: www.brandenburg.de, www.masgf.brandenburg.de, Public Health Institute of Brandenburg, Dr. Ellsäßer
Measures

- Brandenburg’s campaign by paediatricians and midwives (participation rate: 60%) to advise young parents on age-specific accident prevention measures (identified through IDB analysis)

IDB: Starting point for nationwide campaign on injury prevention for children

- Paediatricians offer parents age specific checklists (coverage 90%)
- Midwives actively advise on safety during both prenatal courses and on home visits (coverage 80%)

Structure

- Purpose of Injury Surveillance
  - Injuries in childhood and adolescents: a global health burden
  - Why do injury surveillance in Europe?
- Goals of IDB
- Methodology
- Results
- Policy implication
- Benefits

Summary: Benefits of IDB

- It is more efficient to prevent than to treat
- Cost effective prevention measures require targeting of high risk groups and high risk factors
- Currently data gap to identify such risk groups
- IDB generates lacking data
- BUT IDB is more than just about data generation!
- It also connects institutions involved in the injury prevention process to achieve maximum effectiveness
Appendix 3

Health Information Management System (HIMS)

Information and Documentation System Unit,
Planning and Development Division,
Ministry of Health

Dr Lailanor Ibrahim
HEALTH INFORMATION MANAGEMENT SYSTEM (HIMS)

Dr. Lailanor Ibrahim
Information and Documentation System Unit,
Planning and Development Division,
Ministry of Health

TOPICS
- Introduction
- Health Management Information System (H.M.I.S)
- HMIS for Public Sector
- HMIS Networking
- Examples of HMIS Data Collections
- Conclusions

MALAYSIA is to be a nation of healthy individuals, families and communities

Characteristics of healthcare system
- Equitable
- Affordable
- Efficient
- Technologically appropriate
- Environmentally adaptable
- Consumer friendly

Emphasis of healthcare system
- Quality
- Innovation
- Health promotion
- Promotion of individual responsibility and community participation

INTRODUCTION

Vision for Health

Malaysia is to be a nation of healthy individuals, families and communities

Mission of MOH

The mission of MOH is to build partnership for health to facilitate & support the people to:

- Attain fully their potential in health
- Motivate them to appreciate health as a valuable asset
- Take positive action to improve further & sustain their status to enjoy a better quality of life
1. What is Health Management Information System (HMIS)?
   A decision support system for Health Management

2. Purpose of HMIS?
   To provide managers with the necessary information for making intelligent decision
3. **WHO ARE THE USERS?**
   - Program managers at all levels
   - Health Planners
   - Clinicians and Supervisors

4. **WHAT IT IS FOR?**
   - Budgeting
   - Planning
   - Program performance assessment / evaluation

**HMIS DATA**

From MOH

HMIS System framework consists of subsystems:
1. Medical Care Information System (MCIS)
2. Dental Information System (DIS)
3. Communicable Diseases Information System (CDCIS)

4. **Family Planning Information System (FPIS)**
5. **Family Health Information System (FHIS)**
6. **Rural Environmental Information System (REIS)**
7. **Blood Transfusion Services Information System (BTSIS)**

**B. Non MOH**
- Statistic Department
- Education
- Other related agencies

**C. Private Sector**
- Private Hospitals

6. **HMIS REPORTING**
   - regular reports will be transmitted periodically up to the various managerial levels.
   - Data generation will be done at the district level,
   - data will be compiled or aggregated and transmitted to state level
   - Information required on an ad hoc basis or annually will be processed at MOH level (IDS Unit)

**Inputs**

Some of the type of data will gather by the system
- Attendance's by type of activities
- Output / Workload by health facilities
- Morbidity and Mortality Statistics
3 categories

- Performance indicators e.g. Prevalence / Incidence Rate
- Utilisation indicators e.g. Surveillance etc
- Evaluation Indicators e.g. Mortality Rate etc

EVALUATION OF HMIS

- timeliness of information
- availability of data requested
- appropriateness of forms
- utilisation of information generated
- desired co-ordination or linkage

1 HMIS SUBSYSTEM
MEDICAL CARE INFORMATION SYSTEM
(INPATIENT AND OPD AND SUPPORTIVE)

Basic Document
1. Admission Register
2. Delivery Register
3. Daily Ward Census
4. Daily Inpatient Census for Hospital
5. Daily Inpatient Census By Discipline
6. Death Register

Main Menu
ICD in MOH

- ICD was introduced in MOH since 1960’s.

- The first version of ICD used by MOH was ICD-7 (1955 revision) till 1984

- It was then changed to ICD-9 (ninth revision) which lasted until 1998.

WHO CODE THE ICD-10 CODING?

- In Malaysia, the Assistant Medical Record Officers (AMRO) are assigned as coders.

- Before the implementation, all the state AMROs were given 2 weeks training in ICD-10 conversion from ICD-9 in early 1998 by a WHO consultant.

- Echo training in ICD-10 were given for all AMROs throughout Malaysia.

PROCESS OF ICD-10 CODING

- In 1999, all government MOH hospitals were using ICD-10 classification for morbidity and mortality coding with no procedure coding.

- This was implemented at both inpatient and outpatient services.
Monthly/Annual Report of Admission by Admission Category (PD 204)

Monthly/Annual Report on Morbidity and Mortality of Inpatients (PD 206)

ICD-10 reference file

Morbidity & Mortality report by States, Malaysia
2
HMIS Sub system
Communicable Disease Control Information System
(CDCIS)

3
HMIS SUBSYSTEM
FAMILY HEALTH INFORMATION SYSTEM

Flow of Information for
Public Health Program (CDCIS)

National Level
JKN
(STATE)
PKD
(district)

Decider
Input

Server

Pejabat Rekod
Klinik Dada
Wad
JPL
THE HMIS REPORT - FAMILY HEALTH INFORMATION SYSTEM

There are 3 sections to this report based on the 4 major components under the Family Health Programme:

1. Maternal Care
2. Child Care
3. School Health Service
4. Family Planning (separate report)

Generally this system provides the following information:

Maternal Care

i. Ante-Natal and Postnatal Care
   - Workload in terms of Clinic Attendance.
   - Coverage of AnteNatal Mothers and AnteNatal Mothers Immunised against Tetanus Toxoid.
   - No. and % of mothers with Hb below 9gm%.
   - Coverage of Post-Natal attendance

ii. Delivery Care
   - % of deliveries conducted by types of personnel/facility
   - % of deliveries conducted by trained and untrained personnel
   - % of Born Before Arrival cases
   - Incidence of complications during delivery and puerperium

iii. Specific Mortality Rate

iv. Neonatal Jaundice Management
   - Total G6PD screening done
   - Total number found to be G6PD Deficient
   - % of Neonatal Jaundice detected
   - Neonatal Jaundice Complications - Cases/Deaths

v. Home Visits
   - Total Visits Made
   - Type of visits Made

vi. Supplementary Feeding
   - No. of milk recipients by category
   - Total amount of milk distributed by category of recipients

Child Care

- Workload - Clinic Attendance’s
- Clinic Sessions
- Coverage of children by public health facilities and by age group.
- Coverage of immunization by type, age group and by dosage.
- Return of specific vaccines-stock, supply and utilization.
- Nutritional status of children below 5 years of age.
- Number of Malnourished children on and off Food Basket/Food Supplement.
- Hepatitis B tests done on specific target groups and Hepatitis B immunization given to these target groups.

School Health Service

- Coverage of pre-school centres, primary and secondary schools.
- % Of pre-school children, primary and secondary school children examined by nurses and medical officers by Standards/Forms.
- Immunization coverage of school children by specific Standards/Forms.
- Morbidity pattern among school children.
Purpose and benefits of HMIS online Phase I and Phase II

- to expedite the sending of information from state level and receiving of information at national level in as short a period of time as possible.

- facilitate the program managers in analysing data for quick and accurate decision making.

- it will reduce time consuming tasks in the work process of the staff.

- With this networking, medical staff would eventually be more computer literate.

- It needs only a small space for data storage.
**BACKGROUND**

- Follow up paper on HIMS Blueprint
- Deliverables identified in the HIMS Blueprint
  - Health Informatics Center
  - Electronic reporting system (HIMS-e)
  - National Health Data Warehouse (NHDW)
- IDS & BTMK developed the specifications for the implementation of the HIMS-e.

---

**HIMS-e : Project Scope**

- **Data collection**
  - Design & development of e-forms application
  - Design & development of standardized data interface format
- **Central data storage**
  - Design & development of central data storage for aggregated data & source file from the sites

---

**Project Objectives**

- Established solution set to address issues of timeliness and quality of data being collected and reported by IDS
  - IDS to start receiving electronic returns in 2007
  - No major disruption to operations

---

**HIMS-e : Project Scope**

- **Reports generation**
  - Production of aggregated returns
  - Data transmission to IDS and all stakeholders
- **Reports distributions**
  - Design & development of web based portal
    - Access all reports
    - Distribute update version of e-forms
    - Interface with relevant agencies

---

**Family Health Development**

- Maternal health (antenatal, postnatal)
- Child health
- Women's health (include family planning)
- School health
- Adolescence health
- Kesihatan warga emas
- Nutrition
- Total : 38 forms
**HIMS–e : Project Scope**

- **Medical**
  - Outpatient
  - Inpatient
  - Daycare
  - Supportive
    - Radiology
    - Pathology
    - Rehab
    - Blood bank
- **Total : approximate 30 forms**

**State Health Department**

**Hospital (MRD)**

**HIMS–e : Project Scope**

- **Oral Health**
  - Primary oral healthcare
  - Specialist oral healthcare
  - Community oral healthcare
- **Total : approximate 20 forms**

**State Health Department**

**District (Senior Dental Officer)**

**Dental Clinics / Dental Clinics / Hosp(oral surgery, paed,OMOP)**

**HIMS–e : Solution framework**

**System Demonstration**

**BLOOD TRANSFUSION SERVICE PROGRAM**

- Hospitals will send the forms to the State MRO office
- MRO will enter data into the HIMS e portal
- Validation by state pathologist
- Data aggregation & generation of the reports will be done by the system

**View submission status of States**

**View State and National aggregate Returns**

**Produce and publish adhoc reports**
Benefits

- Reduce time in preparing returns
  - Average 7 man days (58 hours) per month per PKD
    - Data from survey of 26 PKD’s in 5 States
    - New forms will increase effort
  - Reduce time in calculating totals, analysis & aggregating data (PKN)

- Improve quality of data
  - Validation at source

- Facilitate standardization & consistency of data
  - Facility Codes
  - Use of NHDD elements
  - Consistency of terminologies used in forms

Benefits

- Improve timeliness & accuracy of reports compiled by IDS
  - Monitor submission status
  - Data aggregation & reports produced by system
  - More time for value-added activities
  - Timely report preparation, improve data quality

Conclusion

Help to solve many of the current problems with the work process in HMIS data compilation and reports generation at operating facilities & IDS without major disruption to operations

THANK YOU
Appendix 4

Malaysian sources delivered during visit
Malaysian sources delivered during visit


United Nations Country Team Malaysia in cooperation with the Economic Planning Unit of the Prime Minister’s Department (Eds.) Malaysia. Achieving the Millennium Development Goals - Success and Challenges. Malaysia 2005

Ministry of Health Malaysia. Annual Report 2005


Sabirin J, Sivanandam S. Epidemiology of Injury in Malaysia. Disease Control Devison & Public Health Department of the Ministry of Health, Malaysia 1997


Ministry of Health Malaysia. Information and Documentation Unit (IDU)
Ministry of Health Malaysia. Health Management Information System (HMIS)
Ministry of Health Malaysia. Information Technology and Communication (ICT)

Ministry of Health. Youth Health Program for Boys and Girls


Software for the One Stop Crisis Centre (OSCC) Myviss – Malaysia Surveillance System

The Royal Malaysian Police. Reports on violent crimes.
The Royal Malaysian Police. Reports on road traffic crashes.


Checklist of development and early stimulation of children under the age of 1
National Trauma Database Notification Form

Rosnah R. Childhood Injury. Presentation for the Malaysia Workshop on ‘Childhood Injury in Malaysia’, 2006


Website of Health Online: www.myhealth.gov.my
Appendix 5

National Trauma Database (NTrD)

Appendix 5.1

National Trauma Database (NTrD) Notification Form

Appendix 5.2

National Trauma Database (NTrD) Follow Up For
# Recommendations for an Injury Surveillance System in Malaysia

## National Trauma Database (NTrD) Notification Form

### SECTION 1: PATIENT'S PARTICULARS

1. Name:
2. Identification Card Number:
   - MyKad / MyKid:
   - Other document No.:
   - Specify type:
3. Patient RN:
4. Age:
5. Gender:
6. Nationality and Ethnic Group:
   - Malaysian
   - Malay
   - Orang Asli
   - Chinese
   - Bumiputra Sarawak
   - Bumiputra Sabah
   - Other M'sian, specify:
   - Non Malaysian
7. Date of Notification:
8. Date of Admission:
9. Type of Admission:
   - Direct
   - Transfer / Referred from
   - a) Hospital Name:
   - b) Time of Arrival:
   - c) Hospital Type:
10. Hospital without Specialist
11. Hospital with Specialist
12. Health Clinics
13. Private Clinic
14. Not Available

### SECTION 2: ADMISSION

10. Date of Injury:
11. Time of Injury:
12. Mechanism of Injury:
   - Blunt (e.g. MVA)
   - Penetrating (e.g. Stab, Gunshot wound)
   - Burns
13. Injury Intent:
   - Unintentional
   - Maltreatment / Assault by partners
   - Intentional self harm
   - Intent cannot be determined
   - Child neglect / Maltreatment
   - Intention not specified
14. Cause of Injury:
   - Road Traffic Accident
   - Motorcycle Rider
   - Back Seat Passenger
   - Motorcycle Pillion
   - Bicyclist
   - Driver
   - Pedestrian
   - Front Seat Passenger
15. Place of Injury:
   - Road, Street, Highway
   - Residential institution
   - School / Kindergarten / nursery
   - Other specified place
   - Home
   - Sports / Recreational Area
   - Not Available
   - Industrial / Construction Area
   - Trade / Service area

### SECTION 3: INJURY

16. Pulse rate:
17. Respiratory rate:
18. Blood pressure:
   - a) Systolic:
   - b) Diastolic:
19. Temperature:
20. Pulse Oximetry:

### SECTION 4: CLINICAL DETAILS (EMERGENCY DEPARTMENT)

21. Glasgow Coma Scale:
   - a) Best Eyes opening:
   - b) Best Verbal Response:
   - c) Best Motor Response:
   - d) Total GCS:
   - e) Head Injury Category:
22. Reviewed by:
   - Emergency Physician
   - Medical Officer / Trainee
   - Specialist / Consultant
   - Surgeon
   - Medical Officer / Trainee
   - Specialist / Consultant
23. Disposition from ED to:
   - ICU
   - OT
   - General Ward
   - Mortuary
   - Other Hospital
   - AOR

---

Version 1.18 - last amended on 19/03/06

8th of August 2007
**SECTION 5: DIAGNOSIS AND OPERATIVE PROCEDURE**

<table>
<thead>
<tr>
<th>24. Traumatic Brain Injuries (based on ICD10):</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Open wound of head</td>
<td>Open wound of scalp</td>
</tr>
<tr>
<td>- Fracture of skull and facial bones</td>
<td>Fracture of vault of skull</td>
</tr>
<tr>
<td></td>
<td>Fracture of base of skull</td>
</tr>
<tr>
<td></td>
<td>Intracranial injury</td>
</tr>
<tr>
<td></td>
<td>Coronal</td>
</tr>
<tr>
<td></td>
<td>Traumatic cerebral oedema</td>
</tr>
<tr>
<td></td>
<td>Diffuse brain injury</td>
</tr>
<tr>
<td></td>
<td>Focal brain injury</td>
</tr>
<tr>
<td></td>
<td>Epidural haemorrhage</td>
</tr>
<tr>
<td></td>
<td>Intracranial injury, unspecified</td>
</tr>
<tr>
<td>Others, specify:</td>
<td></td>
</tr>
</tbody>
</table>

**Operative Management:**
- Yes (If Yes, please fill up below)
- No (If No, please proceed to Section 6 directly)

**Date of Operation:**

**Time of Operation:**
Start: AM/PM

**Duration Time to Operation:** (Time of Admission to Start of Surgery)

**Operative Procedure:**
- Intracranial
- Intrathoracic
- Intra-abdominal
- Spinal surgery
- Periurethral
- Others, specify:

---

**SECTION 6: IN-HOSPITAL OUTCOME**

<table>
<thead>
<tr>
<th>30. Length of Stay in ICU:</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>- &lt; 24 hrs:</td>
<td>hrs</td>
</tr>
<tr>
<td>- &gt; 24 hrs:</td>
<td>day</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>31. Length of Stay in Hospital:</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>day</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>32. Discharge Date:</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>(dd/mm/yyyy)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>33. Patient's Outcome at Discharge:</th>
<th>47</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Alive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Glasgow Outcome Score at Discharge:</td>
</tr>
<tr>
<td></td>
<td>1 - Dead</td>
</tr>
<tr>
<td></td>
<td>2 - Persistent Vegetative</td>
</tr>
<tr>
<td></td>
<td>3 - Severe Disability</td>
</tr>
<tr>
<td></td>
<td>4 - Moderate Disability</td>
</tr>
<tr>
<td></td>
<td>5 - Well</td>
</tr>
<tr>
<td>b. Death</td>
<td></td>
</tr>
</tbody>
</table>

**Disposition**
- Discharge Home
- Discharge to Referring Hospital
  - Name of Hospital:
- Discharge to Other Hospital
  - Name of Hospital:
- Discharge Against Medical Advice
### SECTION 7: INJURY SEVERITY SCORE

#### 34. Injuries and Injury Severity Score

<table>
<thead>
<tr>
<th>BODY REGION</th>
<th>INJURIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head &amp; Neck</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
</tr>
<tr>
<td></td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td>6.</td>
</tr>
<tr>
<td></td>
<td>7.</td>
</tr>
<tr>
<td>Face</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
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<td>5.</td>
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<td></td>
<td>6.</td>
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<tr>
<td></td>
<td>7.</td>
</tr>
<tr>
<td>Thorax</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
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<tr>
<td></td>
<td>3.</td>
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<td></td>
<td>4.</td>
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<tr>
<td></td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td>6.</td>
</tr>
<tr>
<td></td>
<td>7.</td>
</tr>
<tr>
<td>Abdomen / Pelvic girdle</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>4.</td>
</tr>
<tr>
<td></td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td>6.</td>
</tr>
<tr>
<td></td>
<td>7.</td>
</tr>
<tr>
<td>Extremities / Pelvic girdle</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
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<tr>
<td></td>
<td>4.</td>
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<tr>
<td></td>
<td>5.</td>
</tr>
<tr>
<td></td>
<td>6.</td>
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<td>External</td>
<td>1.</td>
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</tr>
</tbody>
</table>

#### 35. Total ISS:

(Auto Calc)

#### 36. Revised Trauma Score:

(Auto Calc)

#### 37. Please check (v) if patient has one or more criteria:

- [ ] Patient who died from their injuries after admission
- [ ] Patients with injury severity score (ISS) of >15
- [ ] Patients admitted to ICU or high dependency area for >24 hours and mechanically ventilated
- [ ] Urgent surgery (within 24 hours) for intracranial, intrathoracic, intraabdominal or fixation for pelvic or spinal injuries
### Recommendations for an Injury Surveillance System in Malaysia

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#### National Trauma Database (NTrD) Follow Up Form

Complete this form at 3rd month, 6th month, 12th month and annually after the trauma event. Check (+) one box unless specified otherwise.

<table>
<thead>
<tr>
<th>A. Reporting Centre Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. Date of Follow Up: (dd/mm/yyyy)</td>
</tr>
<tr>
<td>C. Name: Mr/Mrs/Ms/Dr</td>
</tr>
<tr>
<td>D. Identification Card Number: MyKad / MyKid</td>
</tr>
<tr>
<td>Other document No.</td>
</tr>
<tr>
<td>Specify type (e.g. passport, armed force ID):</td>
</tr>
<tr>
<td>E. Patient RN: ED: Neurosurgery Dept (if different from ED):</td>
</tr>
</tbody>
</table>

**PATIENT OUTCOME**

1. Follow Up at:
   - 3 months
   - 6 months
   - 1 year

2. Outcome
   - a. Alive
   - b. Death
     - i) Date of death: (dd/mm/yyyy)
   - c. Transferred to another centre
     - i) Date of last follow up: (dd/mm/yyyy)
     - ii) Name of centre transferred to:
   - d. Lost to Follow Up
     - i) Date of last follow up: (dd/mm/yyyy)

3. Glasgow Outcome Score
   - 1 - Dead
   - 2 - Persistent Vegetative
   - 3 - Severe Disability
   - 4 - Moderate Disability
   - 5 - Well

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*Page 1 of 1*

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8<sup>th</sup> of August 2007
Appendix 6

IDB Implementation in Germany

Dr Gabriele Ellsaeßer,
Lecture 12th of July 2007
IDB Implementation in Germany

Example
Injury monitoring at the Clinic of Cottbus (CTK)

Cooperation between the Public Health Institute of Brandenburg and the CTK

Institute of Health Management in cooperation with UNICEF Malaysia, lecture, 12th of July 2007

Steps in an injury surveillance system

- Defining data needs
- Assess available resources
- Train staff and activate system
- Data collection
- Evaluating the surveillance system
- Processing the data
- Using the results to plan prevention/treatment
- Interpreting the data
- Reporting the results

Goals of the IDB

Fills the information gap

- Comprehensive data on all injuries for injury prevention
- Provide data for the analysis of injury patterns
- Provide population based data for identifying countries most at risk
- Provide data for benchmarking between countries
- Produce comparable data for All Injuries, including road safety, self-harm injuries and violence, compatible with an international classification (WHO ICECI)

But: IDB is about more than just data generation

It is a process that links together the different institutions involved in injury prevention:

- To ensure that the data most relevant for policy making is available
- To ensure that policies are targeted at high risk groups and high risk factors
- To ensure that the impact and cost effectiveness of policies can be assessed
- To ensure that the different institutions interact in order to achieve continuous improvement

Basic facts about the IDB implementation process

- In 2005, IDB injury monitoring of children under 18 years
- In 2006 IDB injury monitoring enlarged on all patients admitted to hospital
- CTK: Central hospital with 16 clinics (e.g. psychiatry, ear-nose-throat, ophthalmology, paediatrics, surgery (incl. child surgery), internal medicine and others)
- 1,320 beds
**Basic facts about IDB implementation**

Catchment area with defined population:

1. City of Cottbus - 105,928 people
2. 6 surrounding counties - 44,547 people

**IDB: Data collection in German hospitals**

All children arrive at the accident and emergency unit

Medical examination provided by the attending nurse

Nurses at the accident and emergency unit provide parents and young people with a short questionnaire on injury event (related to IDB Manual)

Medical record

Case record in IDB electronic form by doctor or study nurse

Hospital specific electronic documentation system for diagnoses

IT-Hospital

Public Health Institute of Brandenburg

**Injury surveillance process**

**Germany: Specific IDB for children**

- Transport Module
- Violence Module
- Admission Module
- Protection measures Module
- Social History Module
- Foreign bodies Module
- Product Module
- Self-harm Module
- Sports Module

**Core Data Set**

18 characteristics

**Source:** IDB Germany, Dr. Ellsaesser, Public Health Institute of Brandenburg

**Computerized coding**

Software developed and tested in the field by the Public Health Institute of Brandenburg to facilitate case registering in the hospital

Test result:
- Good structure
- Easy handling
- Data entry takes 3 to 5 minutes per case

**Success factors in the national IDB implementation**

- Health Ministry of Brandenburg agrees to continue IDB in 2007 since it closes important data gap for intentional injuries
- IDB data forms a data source for Brandenburg’s health policy
Success factors in the national IDB implementation

- IDB forms part of Brandenburg’s 2007 WHO application to be certified as a „safe region“
- Second German hospital to implement IDB in 2007
- Additionally two hospitals participate in IDB for children and teenagers (<18 years)

Policy impact

- Injury prevention has become an integral part of the Brandenburg Government’s Health Programme “Growing Up Healthy in Brandenburg”
- State wide campaign: “Growing Up in a Safe Environment”

Threats and Challenges: 1/3

**Problem**
- Reduce administrative burden for medical staff
- Improvement of data quality (product related as well as risk factors of intentional injuries)

**Solution**
- Patient questionnaire and follow up interview by nurse for missing data
- Input of patient data such as diagnoses and cause of injury by nurse (because of data protection) with access to all wards

Threats and Challenges: 2/3

**Problem**
- Reduction in quantity of cases monitored to reduce work load for personnel (required by private hospital operator)

**Solution**
- Collection of data once per week
- Connection of hospital IT system with IDB to identify injury cases
- Estimation of incidence rates based on hospital discharge register

Threats and Challenges: 3/3

**Problem**
- Improvement of representativeness of IDB for accident and emergency department cases

**Solution**
- Inclusion of non hospital based surgeries

Survey vs. Injury Surveillance

**Survey**
- Online-time event
- Excellent for baseline data on a population
- Underreporting of violence
- Requires a large expenditure of human and financial resources

**Injury surveillance**
- Ongoing process
- Excellent for trend analysis
- Based on doctor’s diagnosis
- Built on existing resources and therefore less costly
- Data generated at time of hospital attendancy
- High accuracy since doctor/nurse inputs diagnosis
- Excellent for assessing prevention measures in a time period
Thank you for your attention