



## **MMS Bulletin #108**

*"Gewalt, Gewalterfahrung und Gesundheit"*

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# ***Information on injury and violence in a developing country*** **Dog bites, crocodile bites and gun shots**

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*Lack of reliable information in developing countries is a major obstacle to prevent and deal with violence. This article presents two approaches that have been tried in Sri Lanka to gain information on injury and violence in the community in order to compare the type of "evidence" that each method best provides. One of the methods is to collect the absolute minimum of clinical information on all patients admitted to the hospitals in a conflict zone. The second is to concentrate on specific cases of trauma admitted to hospital. Although the information obtained is different in the two cases, both types of data collection have their place in building up the full picture of injury and violence to help in planning preventive and curative measures.*

Many authorities are now emphasizing that effective health care is based on facts – what is called "Evidence-based medicine". In trying to understand traumatic injury and violence, and to design a strategy for dealing with them, the facts are central to understand and deal with this major public health problem. Without detailed and complete information on the nature and the amount of trauma in the community, the authorities and humanitarian organisations have no clear picture to help them neither to set priorities for intervention nor to assess their effectiveness. Geographic distribution of injury and violence is also important to show where specific measures or extra efforts might be needed.

Collecting data on injury and violence in industrial countries has a long history and has reached a high degree of sophistication. In developing countries, the opposite is still the case, and in most of the poorer countries evidence-based medicine is still a distant dream. According to a recent editorial in The Lancet (Lancet 2005) "...scientists in most parts of the world have to rely on guesswork to understand what makes people sick and why they die." This lack of reliable information is a major obstacle to attempts to prevent and deal with violence.

## **Rationale for the two projects**

We describe two ways in which useful information on injury and violence can be collected: improving the existing data collection systems or carrying out additional collection of detailed data on a limited set of patients. Both involve computerized storage and analysis of the data.

The first method, Multi-disease Surveillance (MDS), collects the absolute minimum of clinical information on patients admitted to hospital (i.e. the presenting complaint and the diagnosis) by using computers installed in the reception area and the wards. The second method – an Injury Surveillance System (ISS) – collects detailed information on specific cases of trauma with the help of a record form filled in by hospital staff. The written form is then transferred to the computer.

## **Multi-disease Surveillance (MDS)**

Health care in Sri Lanka is mainly hospital-based. The main source of statistical data on injuries and violence has been for many years the “Indoor Morbidity and Mortality Return” (IMMR) from each government hospital. This return, collected quarterly, is prepared by medical record staff in the hospitals who codify the discharge diagnosis written by the doctors, into the ICD-10 classification.

However, careful study has shown that the diagnosis is not always recorded on discharge and is often inaccurate (Gamage 2002). These problems are compounded by poor handwriting. A further problem in producing statistics from these laboriously collected hospital returns is the heavy workload needed to transcribe and code the data at the central level. By the time the data is received, analysed and prepared for publication, several years may have passed.

Data collection could be improved if the reason patients gave for coming to hospital could be formalized, a working diagnosis could be recorded shortly after admission and completeness and accuracy of the discharge diagnosis assured. Direct entry of data into the computer by the hospital staff is essential for such a process. This was the basis of the MDS project funded by the Austrian/Swiss Red Cross in Batticaloa District of Eastern Sri Lanka. By installing a computer system fully integrated in the day-to-day activities of each hospital – at the patient reception area and in every ward – staff can enter data directly without manual transcribing. Data recording is easier than the manual method and provides hospital management with information otherwise difficult to obtain.

## **Injury Surveillance System (ISS)**

The second approach was carried out by the Trauma Secretariat of the Health Ministry, which established a pilot ISS in the Western Province of Sri Lanka initially in three hospitals (Colombo South, Kalutara and Horana). Records are filled in by doctors and nurses on injury and violence cases admitted to the surgical and orthopedic wards. The record form was developed by the Trauma Secretariat and the project was funded by AmeriCares and JICA. The aim of the information collected is to provide evidence-based support for policy making, injury prevention, training development and quality management. The ultimate objectives of the system are to reduce trauma and to improve patient outcome following injury and violence.

As this is a specially designed data collection system, it was possible to select in advance which type of patients would be included (unlike the MDS project). Cases of injury and violence were included in the system when they fell into the following categories:

- Transport accidents
- Other external causes of injuries
- Injuries due to acts of intentional self harm, assault, events of undetermined intent, conflict and operations of war
- Patients who were dead on arrival or died in the emergency unit or a ward of the hospital

The data collected on each case is:

- Date/time of injury or violence
- Date/time of admission
- Place of injury
- Activity at the time of the injury
- Alcohol use by the patient within 6 hours of injury
- External causes and details of the injury
- Nature of violence
- Transportation to the hospital
- Vital signs with Glasgow coma score
- Severity
- Final diagnosis
- Outcome / disposition

Data is entered on a printed form for each case admitted, and data entry, coding and editing are done by a trained nurse in each hospital. A regular analysis is carried out in each hospital and the results used to assist hospital management in planning, training and the handling of patients with injury and violence.

## Results from the projects

### MDS project

In the Batticaloa Teaching Hospital, the largest hospital in the Multi-disease Surveillance project, the official quarterly statistics could be produced by computer within days of the year's end in contrast to the past. Table I, while not giving official results (as they have to be cross-checked manually on the first few occasions) gives an idea of the diagnostic information stored in the system under the ICD-10 categories S and T (injury and violence) that can be retrieved.

**Table I MDS – Injury and violence reported from Batticaloa Teaching Hospital (Jul – Dec 2007)**

	Males	Females	Totals
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Superficial injuries	544	216	<b>760</b>
Fractures	618	212	<b>830</b>
Bitten or struck by dog	494	290	<b>784</b>
Open wounds and injuries to blood vessels	462	290	<b>624</b>
Effects of foreign body entering through orifice	221	145	<b>366</b>
Poisoning by drugs, medicaments and biolog. substances	125	149	<b>274</b>
Injuries to eye and orbit	119	46	<b>165</b>
Crushing injuries and traumatic amputations	122	35	<b>157</b>
Other injuries	101	55	<b>156</b>
Complications of surgical and medical care	98	37	<b>135</b>
Other unspecified effects of external causes	71	65	<b>136</b>
Burns and corrosions	51	39	<b>90</b>
Injuries to nerves	54	19	<b>73</b>
Dislocations, sprains and strains	38	18	<b>56</b>
Sequelae of injuries, poisoning and external causes	36	11	<b>47</b>
Snake bites	34	12	<b>46</b>
Injuries of internal organs	20	3	<b>23</b>
Certain early complications of trauma	16	5	<b>21</b>
Toxic effects of organophosphate/carbamate insecticides	23	0	<b>23</b>
Toxic effects of other substances chiefly non medicinal	9	9	<b>18</b>
<b>Total</b>	<b>3256</b>	<b>1528</b>	<b>4784</b>
<b>All admissions</b>	<b>14313</b>	<b>13841</b>	<b>28154</b>

The reason the patient gave for coming to hospital was recorded by staff into the MDS computer system using their own words – no restriction was placed on what staff could enter. As could be expected, this data is an unstructured mixture of causes, effects and diagnoses. While this information is useful to the staff, who can see what type of case is being admitted, it is of less use for developing policy and intervention strategies. However, useful information is contained in it. For example, which problems are more common: dog bites (1007), cat-bites (86), crocodile bites (2) or bites by humans (1)? What bites more often in this part of Sri Lanka: spiders (1) or snakes (166)? In this conflict zone, did patients fare worse from gun shots (83) or traffic accidents (831)?

### ISS project

The Injury Surveillance System was analyzed over a six-month period in 2007. In that time a total of 6064 injury or violence cases were recorded in the three hospitals covered. Cooperation of the staff was excellent and there was little missing data on the record forms. As can be expected from a detailed prospective study, the data is very rich and contains much information to guide future activities at the health policy and planning level. The type of cases in the 6-month period is shown in table 2.

**Table 2 ISS – Type of injury and violence recorded in a 6-month period in 3 hospitals in the Western Province of Sri Lanka (Jul – Dec 2007)**

Transport	1709	29%
Fall	1358	23%
Violence	928	16%
Sharp object	800	14%
Burns	437	8%
Drowning	256	4%
Animal bite/attack	148	3%
Self-inflicted injuries	141	2%
Other	38	1%
<b>Total</b>	<b>5815</b>	<b>100%</b>

A few of the important findings were:

- As in many countries, traffic accidents emerge as the pre-eminent cause of injury and violence,
- There were over twice as many males as females hospitalized from injury and violence – a finding that seems to be reflected in studies everywhere,
- The role of alcohol in violence was clear: for typically unintentional accidents only 5% of cases involved alcohol; however this rises to 12% for traffic accidents, 18% for self-inflicted wounds and a staggering 27% for cases of human violence,
- Although Sri Lanka is considered to be in the throes of an armed conflict, the main causes of the violence were hitting (68%) or stabbing (22%) and almost none (1%) were due to gunshots (even in the MDS project in the conflict zone, less than 2% of violence was from gunshots),
- In the case of violence between humans (which was about a tenth of the cases) the main type was simple interpersonal violence (89%) – in most cases involving family or friends; only 4% of the human violence was sexual.

## Conclusions

Although both projects were able to produce statistics on injury and violence cases presenting to hospitals, the information provided was different. The MDS system simply automates the current manual data collection in the hospitals and does not aim to collect additional information over that normally recorded. The ISS system on the other hand is specially designed to collect comprehensive data just on injury and violence cases. While the MDS system is hoped to provide long-term, sustainable patient documentation in the hospitals, the ISS is more appropriate for collecting specific, detailed data on cases of injury and violence. As ISS was confined to surgical wards, Preliminary Care Units and Emergency Care Units, some causes of violence such as poisoning, which are directly admitted to medical wards, may have been missed.

In the case of the MDS project, the main aim is to improve the overall documentation of patient diagnosis. It does not concentrate on any specific type of admission although the computer program was designed to identify and notify infectious disease. As a side-effect of data collection, the system was also able to provide useful information for hospital management – patients listings, ward statistics, hospital performance indicators and of course the quarterly statistical report, the “IMMR”.

In the case of the ISS study, as well as providing a wealth of detailed facts on the nature and causes of injury and violence, it has also produced improvement in the quality of the hospitals' written records compared to a control group of hospitals. Many useful findings come out of the system that will be used to guide health planning and policy development. These should help to prevent injury and to improve the care of trauma cases. It will be interesting to see what improvements in policy take place in Sri Lanka in the next few months as the information that has been collected is analysed in detail and incorporated into the healthcare planning process. Highlighting geographic differences as these two studies do (the peaceful South compared with the conflict-affected East), should help in this process.

The drawback of both systems is that they depend heavily on the motivation and cooperation of the hospital staff. There is no automatic way of recording clinical data and under-reporting will always be a problem. The motivation provided by these two projects however, should help to reduce this source of error.

The final conclusion of the authors is that both types of data collection have their place in developing countries and that each can be successfully implemented. Both contribute facts necessary for evidence-based medicine. There is an old joke of someone who says “My mind is made up; don’t confuse me with facts”. Hopefully this person is not involved in improving the lot of patients who have suffered injury and violence in Sri Lanka.

*\*This article was written BY the Austrian/Swiss Red Cross in collaboration with the Trauma Secretariat of the Ministry of Healthcare and Nutrition, Sri Lanka*

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## **References**

- Gamage 2002: “Quality of coding of the final diagnosis of Medical Records ...”, Gamage S., Dissertation for MSc (Community Medicine), 2002, PGIM, University of Colombo, Sri Lanka
- Lancet 2005: “Stumbling around in the dark “, Editorial, The Lancet, vol. 365 page 2031, 11th June 2005

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