

**Implementing a hospital based Injury Surveillance Systems in Zambia: a preliminary report**

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The University Teaching Hospital in Lusaka, Zambia, is the nation's premier tertiary referral hospital and a teaching centre for the University of Zambia as well as a research centre of excellence. It was one of the five sites chosen as part of a multinational injury surveillance project conceived to provide preliminary data in response to observations made by public health agencies such as the World Health Organization, and the United States Centres for Disease Control and Prevention (CDC) on the paucity of such data from third world settings. The study covering a period of six months from January 2007 to June 2007, used a pre-tested survey instrument crafted by the Ponce School of Medicine in Puerto Rico in close consultation with the CDC and the Pan-American Health Organization (PAHO). A 24-hour system collected a total of 2714 cases, with due care taken to ensure that all the parameters were entered as required.

**Keywords:** hospital based injury surveillance; interpersonal violence; violence and injury prevention; Zambia

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## **Background**

The occurrence of injuries in the Lusaka, Zambia community is a common phenomenon, and many of those affected seek medical attention from both the private and public health units. It must be acknowledged that some minor injuries may not be recorded and thus escape notice. The distances from health centres and medical fees levied by health institutions are some other issues that influence whether people seek medical attention.

The University Teaching Hospital in Lusaka (UTH ), being a public health institution, sees a larger proportion of these cases compared to the private health sector. The UTH has 1677 bed spaces for adult patients divided into medical, obstetrics and gynaecological and surgical units; another 250 beds are reserved for children. Though the UTH is a tertiary hospital, it also serves as the general public hospital to Lusaka, with a population of over two million residents and visitors, and thus receives self-referral out-patients as well.

Gaining insight into the nature, type, severity, gender, age, location, activity at time of injury, time taken to seek medical attention among other metrics is vitally important not only in clinical care, but also in planning, monitoring and evaluating further research and preventive interventions, as well as informing policy. By and large, most of the data collected involved accidental, intentional (interpersonal violence) and road traffic injuries.

## **Method**

This was a prospective study conducted between January 1 and June 30, 2007, which recruited all new patients seen at the UTH's Accidents and Emergency Department (also called the 'Casualty Department') using a pre-tested surveillance data-capture system jointly developed by PAHO and CDC and adapted for use in this pilot study. The data was manually collected by two nurses pre-trained for this purpose; one covered the day shift while the other one worked at night on an alternative basis. A separate data entry officer working in the records department was tasked to randomly and independently sample files for completeness of data. The data was then transferred to an electronic version of the questionnaire by the author and a data entry expert, using Epi-Info Version 6.4. This was then submitted via the internet to the analysis centre at the Ponce School of Medicine in Puerto Rico, which also undertook monitoring of the data quality and feedback to the researchers at UTH.

The injuries collected were divided into road traffic injuries (RTI), interpersonal violence (IPV), self-inflicted injuries (SII) and other types of injuries (OTI).

## **Results**

After the surveillance closed, a total of 2,714 incidents had been recorded, and are broken down as follows:

- 1332, or 49% of the total were due to IPV;
- 1352 or 49% of the total were due to RTI;
- 26 cases were due to SII;
- 4 cases were due to OTI.

*Gender* distribution was uneven, with over 70% of the cases involving males, both for RTI (71.7%) and for IPV (75.8%). Young male adults aged from 15 to 39 years were predominantly involved (chi-squared test:  $P < 0.01$ ).

### *Road Traffic Injuries*

Most RTI (84.3%) occurred on the streets, a small number at home, at work, or not known, and most injuries (80.3%) occurred whilst people were travelling, though some whilst the victims were at work, at school, or not known. Just over half the victims were pedestrians; the second most frequent road user injured are motorcycle riders (36%); others are injured whilst using bicycles, cars, trucks or buses.

Summarising RTI, the following key points emerged:

- Approximately nine out of ten pedestrians injured are hit by automobiles (89.5%);
- most bicycle riders are injured as a result of collisions with cars (56.4%), while more than half of motorcycle rider injuries are due to collisions with other motorcycles (55.6%) or heavy vehicles (33.3%);
- most injuries to cases using cars or trucks/buses as a mode of transport are a result of collisions with similar vehicles (95.1% and 72.5%, respectively);
- head injuries were the commonest site of injury at (41.6%), followed by upper extremities (19.4%) and thorax and abdomen (13.8%). Multiple injuries are common in RTI (22.3%);
- head injuries among RTI cases were mostly due to bruises or contusions (54.4%) and lacerations (38.0%), though there were four brain trauma injuries;

- approximately 13% of RTI cases showed evidence of alcohol use. However, for 55% of cases this information was not known.

### *Interpersonal violence*

Nearly half (48.5%) of IPV cases occurred on the streets and 33.3% occurred at home, others in bars or at work, or not known. 70.2% of victims reported that the injury occurred in a quarrel or a fight, the majority with an unknown assailant, and 13.8% in a burglary or robbery. A third of injuries occurring in the context of family or domestic violence are with a partner or ex-partner, a further third involves a known person. The great majority of the perpetrators are male, 53% recorded to 3% female; unfortunately 44% were not recorded.

The majority of IPV incidents (95.6%) employed blunt force (blows) as the mechanism of injury; there were a small number of stabbings (1.5%) and only three recorded cases of gunshots. The primary site of injury was the head at 67.6%, with upper extremities and thorax and abdomen next at 14.3% and 9.5% respectively. Most head injuries resulted in lacerations (56.3%) and bruises or contusions (35.7%); there were two cases of brain trauma.

### **Conclusions**

This is the first time that systematic collection of injury data has been successfully implemented at UTH, and the information obtained is useful in examining the context and nature of injuries seen in the emergency room on a daily basis. This pilot project demonstrates that it is possible to collect detailed information on the context in which

IPV and RTI occur at a hospital with a high volume of injury patients. For example, we determined that:

- young adult males between the ages of 20-39 are most frequently affected by IPV and RTI;
- most RTI occurs among pedestrians and motorcycle riders. Pedestrians are mostly injured by automobiles while most motorcycle riders are injured in collisions with other motorcycles;
- IPV results mostly in head lacerations/abrasions while head bruises/contusions are the most frequent injury as a result of RTI;
- One-third of IPV arises from domestic problems.

Information on the context in which IPV and RTI occur, as provided by a surveillance system, should become an integral part of the regular information gathering process from patients treated for specific injuries at Emergency Departments. Such an ongoing surveillance system would yield information to help both local and state health authorities better understand the challenges of major injury and how to address these via public health methods. For example, there are clear implications for road safety programmes, particularly targeting pedestrians and motor cycle riders. In IPV there are implications for preventative programmes on domestic violence. In this snapshot, the use of firearms in IPV in Zambia is minimal, but the use of blunt force results in head injuries in approximately two-thirds of all cases.

Six months is insufficient time to predict longer-term trends, seasonal variations and responses to preventative interventions. The surveillance system should not be seen as a special, temporary project, but rather as a fundamental element of a long-term strategy for the control and prevention of injuries in our communities.

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### **Notes on Contributor:**

Robert Mtonga is a Consulting Medical Officer at the University Teaching Hospital, Lusaka. He is the medical director of the IANSA Public Health Network, and as Landmine Monitor, collects data and publishes on landmine injuries and was a contributor to *Primary Care of Landmine Injuries in Africa*. He serves on the steering committee of the Cluster Munitions Coalition.